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December 8, 1969

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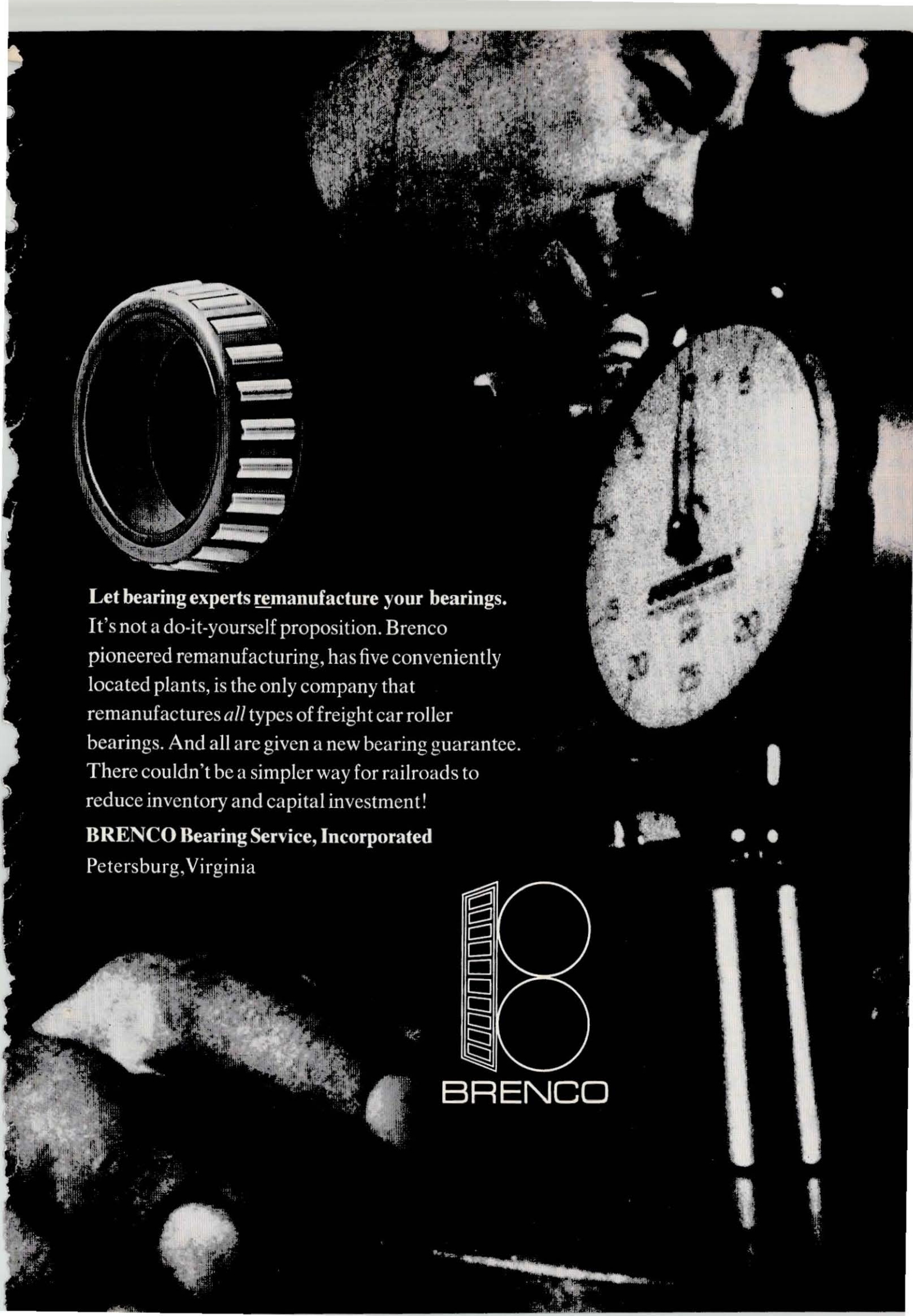

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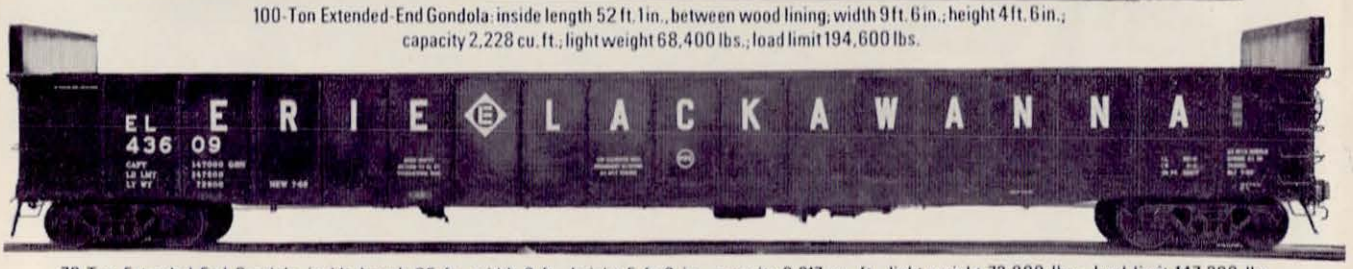

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100-Ton Fixed-End Gondola: inside length 52 ft. 1 in., between wood lining; width 9 ft. 6 in.; height 4 ft. 6 in.; capacity 2,228 cu. ft.; light weight 64,700 lbs.; load limit 198,300 lbs.

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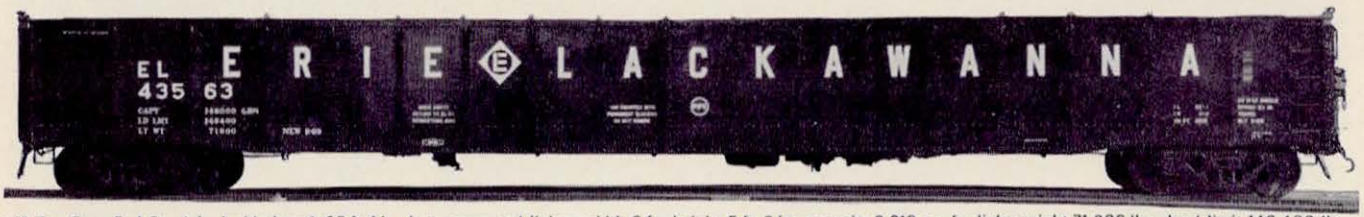

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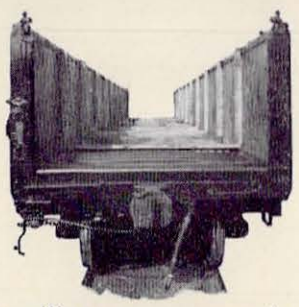

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RAILWAY AGE

December 8, 1969 • Vol. 167, No. 22

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This on/off-track unit discs up to 1.75 miles per on-track hour.

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. . . AND COMING NEXT WEEK

The Dec. 15 issue of Railway Age will carry reports on two widely different passenger trains: (1) The strange case of NP's "Mainstreeter"—the train the ICC will not let die. (2) The happy case of the "Metroliner." An early skeptic takes a new look.

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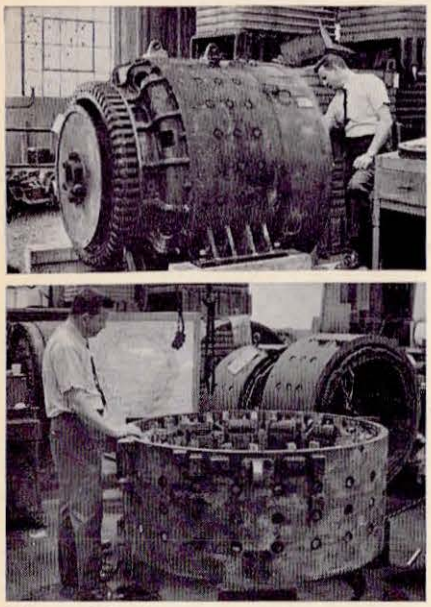

Above: A D-12 generator prior to conversion. Below: D-32 stator during rewinding. Note mounting lugs, adaptable to any locomotive.

Railways are finding National's generator-conversion plan a big time-and-money saver in meeting the need for more power for traction motors. We remanufacture EMD D-12 generators – convert them to D-32 design to give you optimum power in frame mountings that *fit any locomotive.* This works two ways: (1) We convert *your* D-12 to modern D-32 design, or (2) we sell you a D-32 from our unit exchange stock—and ship immediately. Either way, you get the unmatched quality of National designs, materials and workmanship, you make substantial time and dollar savings over new epuipment, and you get a generator that mounts on any EMD locomotive. *It reduces inventory.*

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SHORT AND SIGNIFICANT

Air forwarding request by SP moves ahead

The Civil Aeronautics Board is moving closer to consideration of Southern Pacific's request for authority to act as an air freight forwarder through SP's truck line (RA, Aug. 25). A pre-hearing conference this week before CAB examiner Thomas P. Sheehan was expected to set the ground-rules and outline the issues for forthcoming hearings, for which a date should be announced soon. SP asked for the authority July 10, 1967. The SP case may have important overtones. Santa Fe and Missouri Pacific also have applied to become forwarders and move freight to and from airplanes.

N&W to provide COFC service for containerships

Norfolk & Western, working with Associated Container Tranportation (USA) and Interpool, Inc., has agreed to provide COFC service for all containerships involved in international commerce. This represents a major departure from the East Coast trend of maintaining a TOFC-only system. Interpool, Inc. will supply a chassis pool at various N&W rail heads. Interpool is a subsidiary of Steadman Industries.

Mediation talks start Jan. 6 in fireman case

The railroads and the United Transportation Union last week agreed to what the Department of Labor described as an "unusual course" to preclude a threatened work stoppage over the fireman-manning issue. The parties will begin talks Jan. 6 with a "distinguished" mediator to be selected by Secretary of Labor George P. Shultz. The Department of Labor said that "acceptance of mediation for an indefinite period does not legally prejudice the right of either party to an emergency board later."

FGE announces $20-million, 1,000-car order

Directors of Fruit Growers Express have authorized the building of 1,000 new 50-ft, 70-ton-capacity bunkerless refrigerator cars at FGE's Alexandria, Va., shop starting in the first quarter of 1970. The cost is estimated at $20 million. The cars will have cushion underframes, foamed-in-place polyurethane insulation, and load protection devices.

LIRR asks ICC for exemption from rate hike

The state-owned Long Island Rail Road, which unsuccessfully opposed the industry's recent request for a 6% emergency rate increase, has now asked the ICC to cancel the increase as it applies to LIRR's shippers and receivers. The nation's busiest commuter railroad, LIRR handles about 100,000 carloads of freight a year—and last year lost $6.68 million on freight operations. LIRR fears that the new increase will drive away freight and increase the dollar loss. The road in its petition to the ICC reiterated its plea for "a fairer division of rates."

Penn Central officers meet new president

Paul A. Gorman, former president of Western Electric Co., took over as president of the Penn Central Dec. 1. PC Chairman Stuart T. Saunders introduced him to the railroad's officers as a man with "an exceptional record of achievement [who] will be free to develop new approaches to the administration and management of our company." Said Saunders: "Penn Central, because of its size, complexity and diversity, requires the talents of a president with a wide range of skills and experience. We are very fortunate to get a man with such proven qualifications . . . . He brings to Penn Central rich experience in manufacturing, production, finance, accounting, personnel and labor relations." As president of PC, Gorman succeeded Alfred E. Perlman, one of the railroad industry's most widely respected operating officers. Perlman last week became vice chairman of the Penn Central board, reporting to Saunders. Gorman became president and chief administrative officer of both Penn Central Co., the holding company, and Penn Central Transportation Co., the railroad operating company.

MONDAY MORNING REPORT

A SUBSIDY BILL TAKES SHAPE

The Senate Commerce Committee is expected to act this week on a passenger-train subsidy bill that has finally been drawn up by its transportation subcommittee. While the legislation, as drafted, would go a long way toward relieving railroads of the burden of providing uneconomic passenger service, it would not go all the way—and thus falls short of the industry's hopes.

WHAT THE PROPOSED LEGISLATION SAYS . . .

Under the bill, the Secretary of Transportation would be authorized to designate certain passenger trains as part of a National Passenger Railroad System eligible for Federal aid to the extent of 75% of operating losses. (The railroads want 100% indemnification.) For operating subsidies, the bill would provide $60 million a year for four years. In addition, it would authorize the expenditure of $169 million for new passenger-train equipment and for roadway improvements. The bill would also make it easier for railroads to abandon those red-ink trains not considered essential to the public convenience and necessity—i.e. not designated as part of the National Railroad Passenger system.

. . . AND WHAT IT DOES NOT SAY

While the proposed legislation would permit DOT to set service standards for subsidized trains, there is no mention of crew sizes—which led some observers last week to ask: "Will the Federal government be willing to subsidize uneconomic manning requirements?" Excessive crews are not, of course, the only reason for passenger-train deficits. But they are a factor, as the Burlington has demonstrated.

THE BURLINGTON'S EXPERIENCE

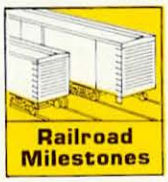
In a widely-quoted study two years ago (RA, Nov. 20, 1967, p. 8) Burlington did a costs/revenues comparison of the "California Zephyr" on its Chicago-Denver journey and a Boeing 727 jet making the same trip. Among other things, Burlington found that wage costs for the "Zephyr's" 47 crew members came to $2,288, compared with $391 for the 727's crew of six. More recently (RA, June 30, p. 70), Burlington reported failure in its effort to win more realistic arrangements from the operating brotherhoods. Burlington had proposed, in March, that the nine engine-crew districts and six train-crew districts on the 1,000-mile Chicago-Denver run be merged into three districts. Whether the Federal government—when and if it begins to pay the bills—will be more successful remains to be seen.

When freight cars got bigger... Edgewater was there!

The 50-ton boxcars and the 70-ton hoppers—long the workhorses of the railroad car fleet—are being replaced by cars half again as large, and by other heavy-duty cars for specific products. They serve shippers better because they carry heavier loads at faster speeds.

Naturally, these cars required bigger, stronger wheels—and when need arose, Edgewater was ready with 38-inch, heavy-duty wrought steel wheels.

Today, Edgewater wheels are better than ever before. Our electric furnace steelmaking processes, our forging and rolling techniques, our modern machining and heat treating facilities all contribute to the production of wheels that provide better service, greater safety, longer life.



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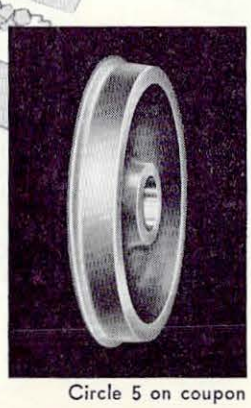

FOR MILESTONES AHEAD

Edgewater has consistently worked closely with railroads and carbuilders to meet or anticipate their changing requirements. The development of the 38-inch wheel is one example of the effectiveness of this policy.

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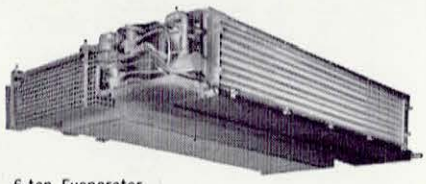
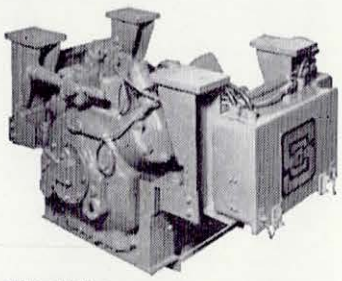
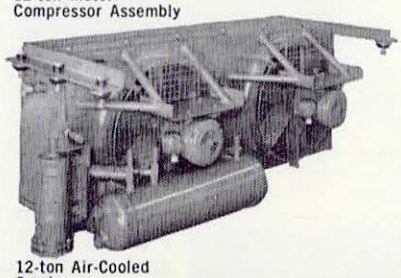


6-ton Evaporator and Blower Assembly, overhead unit



12-ton Motor-Compressor Assembly



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These units are part of the **Safety** Equipment which provides the air-conditioning for cars on the new high-speed Northeast Corridor trains. A motor-compressor assembly, air-cooled condenser unit, and a motor starter and control panel are each separately mounted under each car. Two six-ton evaporator and blower assemblies are installed above the ceiling, one at each end of the car.

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RAILWAY AGE
THE TRANSPORTATION WEEKLY
December 8, 1969

1969 car orders now estimated at 72,000

The American Railway Car Institute is now estimating that orders for new freight cars this year will total 72,000, compared with 63,556 in 1968. ARCI's Marketing Forecast Committee is predicting that 63,100 new cars will be ordered in 1970. The committee's extended forecast sees orders rising to 69,300 in 1971.

ARCI President Walter A. Renz said the committee's "reasonably optimistic" outlook could be brightened by passage of pending legislation to permit five-year amortization of rolling stock.

Deliveries of freight cars are expected to amount to 65,000 in 1969, an increase of 16% over the 56,232 cars delivered in 1968. Deliveries in 1970 are estimated at 64,600, and in 1971, 67,000.

The Market Forecasting Committee projects a backlog of car orders totaling 38,740 as of the end of 1969; 37,240 cars as of Dec. 31, 1970; and 39,540 cars as of Dec. 31, 1971.

In addition to the long-range forecasts, ARCI last week released actual orders-and-deliveries figures for October and this year's first 10 months.

WEEK AT A GLANCE

Orders for new cars in October amounted to 3,782, bringing the year's total to 67,648. In addition, 590 rebuilt cars were ordered in October. Also in October, 6,972 new cars and 631 rebuilds were delivered.

The backlog of new cars on order and undelivered stood at 42,043 on Nov. 1.

In releasing ARCI's forecast, Renz commented: "Washington has demonstrated its awareness of the freight-car shortage, which has already hampered a wide area of the economy. The railroads, of course, have an overriding stake in providing an ample supply of modern cars if they are to retain their share of the intercity freight market, now at 41%." He noted that carriers have been scrapping cars at an annual rate of 85,000 units, "far in excess of replacements."

House approves Metroliner grade crossing aid

The House of Representatives has approved a bill that would authorize a $26 million demonstration project to eliminate all public grade crossings in the paths of the Metroliner and Turboliner between Washington and Boston. According to the terms of the bill, if the highway involved in the crossing is on any federal-aid system, the federal government will pay 90% of the cost. Penn Central will pay the other 10%. If the highway is not on any federal-aid system, then the government will pay 80% of the cost, the state involved will pay 10%, with PC paying the remainder. Of the $26 million authorized, $7 million is to come from the highway trust fund, the other $19 million from the general fund. There are 43 crossings along the route.

The bill also authorizes DOT Secretary John A. Volpe to conduct a complete study of grade crossings throughout the country with the aim of eliminating them. The Secretary is to make his findings and recommendations known to Congress by January 10, 1971, including cost estimates.

GM diesels set sail for Taiwan

In a shipment described as the most valuable ever handled by the Port of Chicago, one of 44 diesels built by General Motors' Electro-Motive Division is loaded aboard a ship bound for Taiwan. The $7.5 million cargo weighed in at 3600 tons. The diesels were financed by the World Bank for the Taiwan Railway Administration.

The shipment includes 39 1500-hp G22C units and five 1000-hp GA18 units. With the arrival of these diesels, the Taiwan National Railway will be operating about 129 GM units.

GUS WELTY

LINES ON LABOR

IT'S WONDROUS STRANGE, how people can always find something to talk about in the 24 hours preceding a strike deadline. For a year, these people had been doing everything *but* talking. They—the shopcrafts and the railroads—had been following the unwritten rule which seems to call for each side to submit demands and then stand pat. Normal mediation procedures were of no help. An emergency board came on the scene, investigated, made its report. Still, nothing happened. A strike seemed certain—right up to and even a bit beyond the deadline hour.

WHEN THE SHOPCRAFTS first threatened a strike, they named six roads on their target list. The move seemed designed to force the Nixon Administration's hand, and it did; the President created an emergency board. This time around, the unions narrowed their field. They talked of selective strikes against only two or three companies—and there were no names mentioned. Whoever was to be struck would learn about it, apparently, only when the pickets appeared.

IT WOULD BE UNFAIR and probably inaccurate to say that collective bargaining in the railroad industry has completely broken down. Bargaining in major cases, however, has become ritualistic. It's almost as if the parties were following a set script—with only the last page changed, from case to case, depending upon who in government does the last-minute arm-twisting to head off a crippling strike.

RAILROADS AND RAIL UNIONS are not experiencing anything now that they have not experienced before, so far as government is concerned. Every President since Hoover has been involved, by choice or by necessity, in rail-management/labor affairs. Every President since Hoover must have wondered, at some point, about the usefulness of a Railway Labor Act which kept coming apart at the seams at critical moments. But no President—until now—has been willing to venture into the tricky area of proposing new "permanent" legislation to deal with emergency situations.

PRESIDENT NIXON may or may not be the man to break this chain of legislative inaction. No matter what he might suggest, he can count on trouble. Management, quite likely, would never be satisfied with any definition of "emergency" but its own. Labor would balk at any proposal with even a hint of coercion in its settlement provisions. But Mr. Nixon and his Labor Department aides are looking, searching, trying to find a better way. In the wake of the latest "crisis," even that much is encouraging.

Shopcrafts and railroads reach accord

By this time, the nation's railroads, their employees and their customers ought to be used to "crisis" bargaining—with labor disputes going right down to the wire before a strike threat is removed. In the current shopcraft wage dispute, however, there is a new wrinkle—described by one government official as a "minute by minute" postponement of a walkout which could have occurred at 12:01 a.m. Wednesday, Dec. 3. The four shop unions apparently thought it worthwhile to keep talking—and talk they did until about 2:30 a.m. last Wednesday. Further sessions were scheduled for late Wednesday afternoon after all concerned had had a few hours sleep.

Talks continued, on almost a continuous basis. And early Thursday morning the word began to filter out. The parties had reached a tentative agreement, subject to necessary ratifications. No details were released, but it was understood that the accord included a package covering the 1969-70 period. With the agreement, all proposed resort to self-help was called off—the strike threat itself and the railroads' warning of a shutdown—and a day and a half of nervous waiting came to an end.

At no time had the shopcrafts said how many roads would be struck, or whether the targets would be chosen from the six carriers on the organizations' list when a first strike deadline was set in September. Then, the unions were aiming at Santa Fe, Illinois Central, Great Northern, Southern, Erie Lackawanna and Chesapeake & Ohio/Baltimore & Ohio. Creation of an emergency board blocked the organizations from taking action and set the parties on the schedule which expired—or could have expired—last Wednesday morning.

The board's recommendations covered only a settlement for 1969, and included provision for wage increases of 2% retroactive to Jan. 1 and 3% retroactive to July 1. In addition, the three-member panel suggested that the carriers accept a uniform minimum-rate-of-pay proposal and that the parties negotiate a so-called Class 1 mechanic rate of not less than 20 cents an hour above the regular mechanic rate "to be applied to the more skilled and responsible assignments as determined by the parties." About 44,000 employees are involved in the dispute.

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WABCO

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It goes nowhere —and everywhere

From a stationary position, No. 8799 can simulate operations over all SP territory. It is the basic tool of what President B. F. Biaggini calls a "new academy for locomotive engineers."

By **ROBERT D. BARTLEY,** Associate Editor

Southern Pacific's Number 8799 is a truly remarkable locomotive. In the morning it may, for example, be herding 7,000 tons of general merchandise down past snow-capped Mt. Shasta in Northern California, its dynamic brakes straining because of the 2.2% grade leading to the floor of the Sacramento River Valley.

Then in the afternoon, it may be way off toward the eastern slopes of SP's "Golden Empire," its stubby red snout leading a 10,000-ton train into the New Orleans delta area.

In the evening of the same day, No. 8799 can be back in California hauling a 100-car unit train of ore from Indio to Los Angeles over the tricky Beaumont Hill.

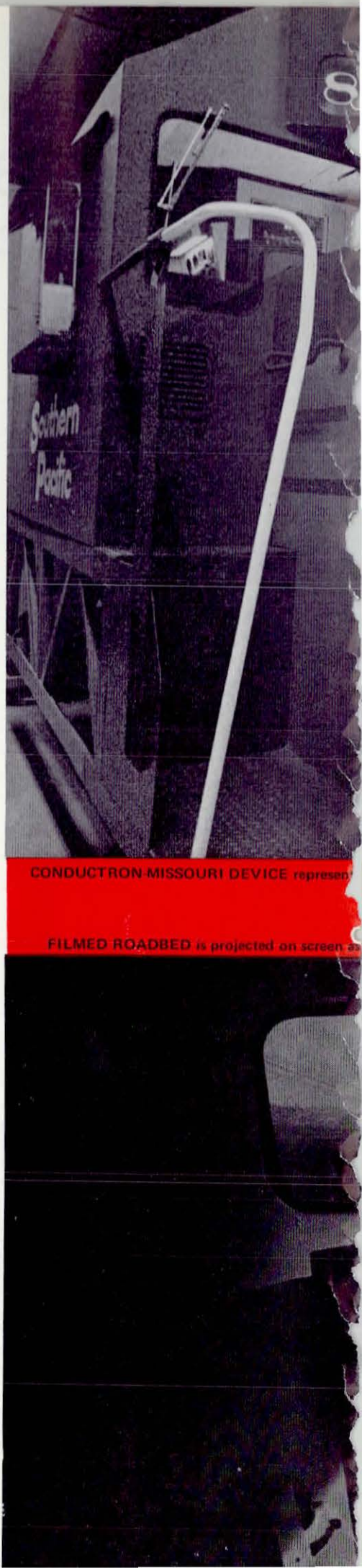
No. 8799 can perform this impossible feat day after day only because it really isn't real at all. It is a make-believe locomotive created for SP by Conductron-Missouri. While No. 8799 may not be real, it certainly looks, sounds and acts like the real thing. And when a computer-created train is coupled behind it and true-to-life train handling situations are interjected electronically into the simulator system, anyone "driving" No. 8799 is going to find it difficult to believe that he's really in a synthetic world. Even the filmed roadbed projected on the screen in front of the locomotive cab becomes uncannily real when all the subsystems act in harmony under the direction of the device's nanosecond computer.

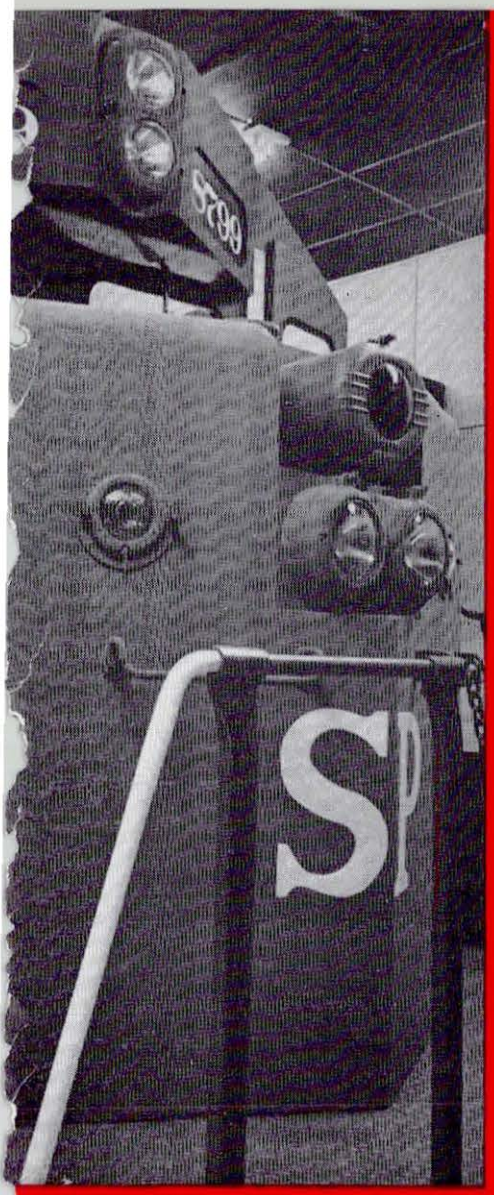
● **Now in "Shakedown."** The $1 million unit will be serving as the basic tool for what SP President B. F. Biaggini calls his road's "new academy for locomotive engineers." The new training device, which has been under development and construction at the Conductron-Missouri plant in Downey, Calif., for the past year and is now undergoing final "shakedown" runs, will be turned over officially to SP's engine service training section soon. For the time being No. 8799 will be making its simulated journeys to such far away cities as St. Louis and Portland, Ore., without ever having been outside Downey. The simulator as well as the engineman academy campus will be located at the Conductron-Missouri plant, where SP has leased additional space for classrooms and for housing other visual aids essential to the training program.

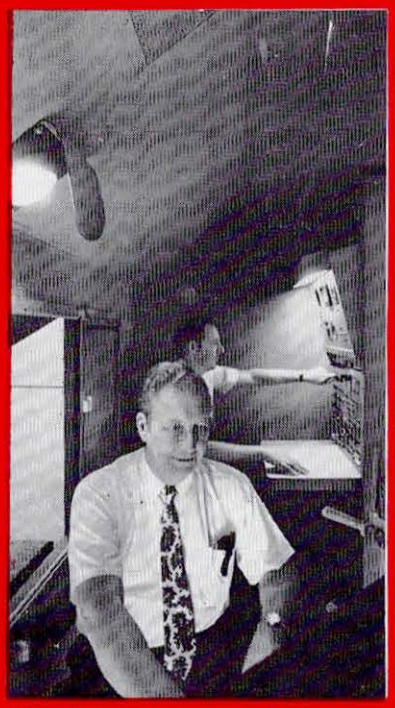
The SP locomotive train-operation simulator has the distinction of being the first one ever *ordered* by a U.S. railroad (in September 1968). However, it is not the first one ever *delivered* here. In October 1968, Santa Fe also elected to purchase a simulator, and this Link-built unit was delivered in September (RA, Sept. 15/22, p. 36). Thus, the U.S. railroad industry, which never before had such a thing as a locomotive simulator, now finds itself with two. While the SP and Santa Fe are essentially seeking the same goal with their units—standardized and, therefore, better training for enginemen—the two systems differ considerably in their approach to simulation.

The Santa Fe simulator, designed to fit into a converted chair-club car, is a mobile unit which can be transported to training sites throughout the Santa Fe system. The SP's, on the other hand, has been designed for installation in a permanent location, meaning that the trainees will come to it, rather than the unit coming to them. In sacrificing the mobility feature, SP appears to have given itself, and the simulator builder, a little more freedom in the realm of design, and full advantage of the extra elbow room has been taken.

● **Similar to SD-45.** The cab of No. 8799 looks like the one on the real EMD SD-45 locomotive. The nose of



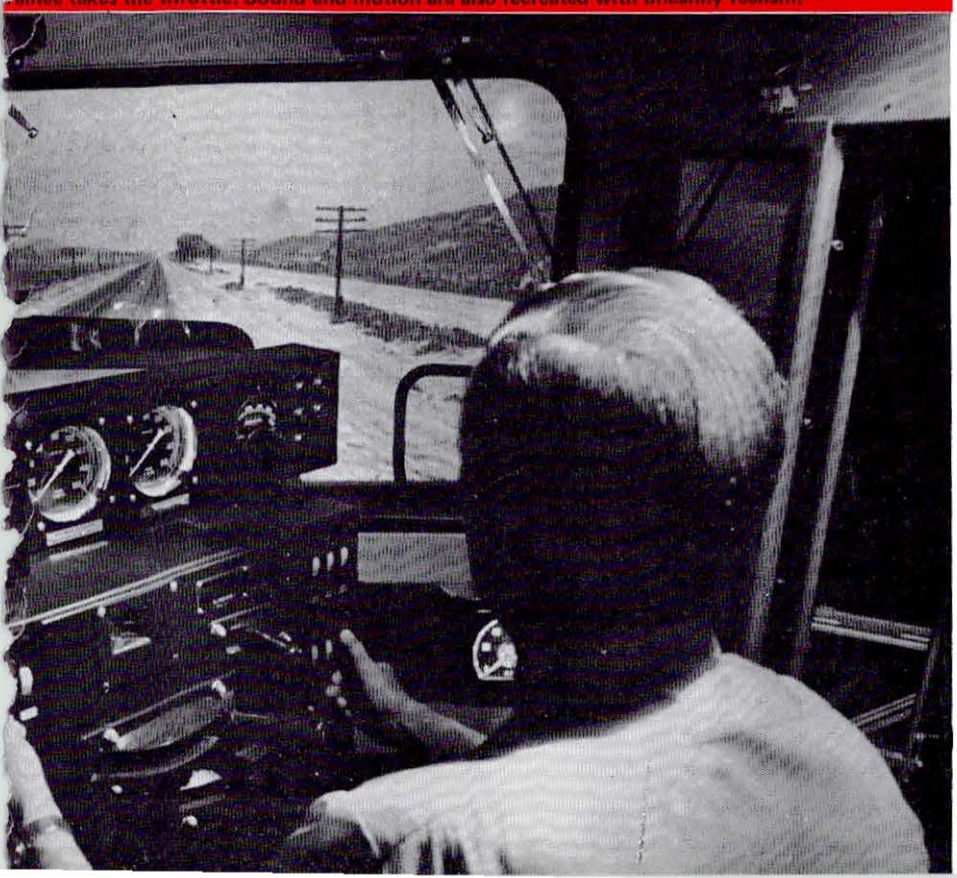




INSTRUCTOR, at control panel behind trainee, can direct computer to create a variety of operating conditions and train lengths.

million of well-planned make-believe.

ainee takes the throttle. Sound and motion are also recreated with uncanny realism.



the simulator is, however, about 6 feet shorter than the real thing, but this difference is hardly discernible. As a matter of fact, Conductron-Missouri engineers learned through studies that they would have to shorten the nose, not to save space, but to add reality to the scene projected on the roadway screen ahead.

Since realism heightens trainee interest and also motivates and challenges him to achieve a high degree of competence, the individual (but interwoven) subsystems have each received very close attention. The interior of the cab, for instance, is a highly faithful reproduction of the real thing. Both electronic magic and tape recordings capture railroading's sounds. Nosing and lateral forces, cab vibrations felt when tilting on curves, and scores of other motions are ready to respond instantly to the computer's command. Fast reacting hydraulic pistons, identical to those used in aircraft simulators are key elements in the system.

Aside from leading the assault on a trainee's senses of hearing, feeling and sight, the computer for the simulator system also serves as the trailing train in the training mission. It can be programmed to create electronically a 150-car train of 100-ton open top hoppers, and then blocks of 25 cars can be added (up to 200 cars altogether) with a mere flip of a switch on the control console. Brake type, car length, car weight and track conditions can be changed just as easily by the computer, brake leakage can be established and held, more locomotives can be added as the computer grows a larger train, and dynamic braking can be reduced or lost altogether. Literally scores of legitimate operating problems can be introduced by the instructor from his post at the computer console located directly behind the engineer's seat. Emergency situations have been programmed into the computer, and the computer really outdoes itself in making these happenings come to life.

● **The ballast blurs.** When ready to make his first simulated run while seated in the cab's right hand seat, a trainee will learn that his movement of the throttle will start everything in motion. Simultaneously, the engine will churn louder, the cab itself will begin to vibrate and maybe lurch a bit, indicator needles in up-close gauges will shudder and begin to move slowly, and through the cab window ahead the scene will begin to move and gradually pick up speed. A glance out the window at the track ballast will also show that it is beginning to blur as speed is picked up. With all this activity going on at once, the simulator soon ceases to be a simulator and becomes, instead, SP No. 8799, a 3600-hp locomotive on an im-

portant assignment on the Shasta Route, the Sunset Route, or whatever it may be. The faint odor of diesel fuel, although not simulated, will surely go wafting through the cab when some trainees with keen imaginations are at the controls.

The cab itself, the simulated sounds and motions and even the computer system and the programming were developed by Conductron-Missouri engineers with relative ease. The visual subsystem, on the other hand, became quite a challenge for the engineers and has required the most innovative efforts to reach the high degree of realism needed for training.

"In railroading," says Gordon Adams, SP research engineer, "the vast majority of operating movements and reactions come from what the man sees in front of him. For this reason, a clear and realistic visual system is essential."

Unfortunately, none of the existing simulator visual systems, like those for aircraft, highway vehicles, military vehicles, had—or needed— the high degree of resolution that could clearly pick up something like a railroad signal at a distance.

SP and Conductron-Missouri eventually developed a projection system involving the use of three movie projectors containing slightly different films which could be displayed and synchronized at the command of the computer. The roadway scene is projected on a giant 22 ft. wide by 10½ ft. high rear projection screen. The trainee cannot see the edges of the scene, or the walls of the room in which the unit is installed.

● **Rear-projection units.** The three 35-mm projectors are located in a special booth behind the screen. These computer-controlled units project through special dissolving mirrors which permit changing from one projector to another without the change being detectable by the human eye. Through the use of the three projectors, a trainee on a mission in the simulator can get the feel of, say, entering a siding and passing through it. Then, through the magic of the computer, he can be taken back to the approach to the siding, and allowed to hold the main track. The computer, in this case, would simply command one of the other projectors to display its film on the screen.

The highly sophisticated projectors for the system don't have regular mechanical cam-type shutters such as are found on the majority of projectors. Instead, they are equipped with a special pulse-xenon lamp pin registration which holds a film frame with a great degree of accuracy. Thus, when projectors are switched, the frames blend in with no detectable jump encountered.

Altogether, the SP simulator has four visual systems. In addition to the very sophisticated 3-projector system for the roadway scene ahead, there's one for projecting a film of the trackside ballast on a screen located on the floor of the simulator room directly beneath the engineman's window. It will be used mostly to allow the trainee to learn to associate his locomotive speed with the way the ballast looks outside his window. The third and fourth projection systems consist merely of movement of lights outside the frosted window on the left hand side of the cab and on a vertical screen outside the open right hand window. These lights are synchronized to move according to the speed of the unit and are used primarily to create the feeling of movement during a training session.

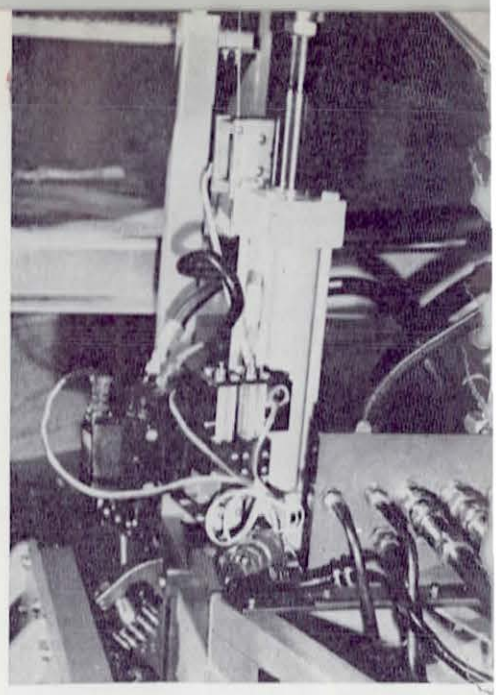
● **Some problems.** As might be expected when a totally new concept is being developed, the road to perfection can get bumpy now and then. This was true with the simulator's main projection system. At one point, a problem with light intensity cropped up, causing all the scenes projected on the screen to appear like the training runs were always being made in early morning or late evening. "There's no question but what the visual system for the train simulator is one of the most demanding we've recently encountered," says Dalton E. Chabot, Conductron-Missouri's manager of marketing. "Aircraft simulators require more programming for the instrumentation than do train simulators, but their requirements for visual scenario represent only a small portion of the training mission. The train simulator however is of little use in training without a flexible visual system of high resolution."

That Conductron-Missouri engineers have been able to iron out the visual problems encountered along the way is best brought out in the following story which SP research engineer Adams likes to tell: "One of the young secretaries at the Downey plant asked to take a 'ride' in the simulator during one of the test runs. We could see that she was quite impressed with it all. But we really didn't know how much so until she refused to dismount from the unit to return to her desk until we brought it to a complete stop."

Adams himself knows the feeling of reality that can be created by simulators. In his early investigations of all the various similator systems employed in training he had an opportunity to fly a Boeing 727. "I didn't fly it very well," he admits. "But, because it was a simulator, I'm alive today to tell about my experience. That's one of the key benefits of simulation."

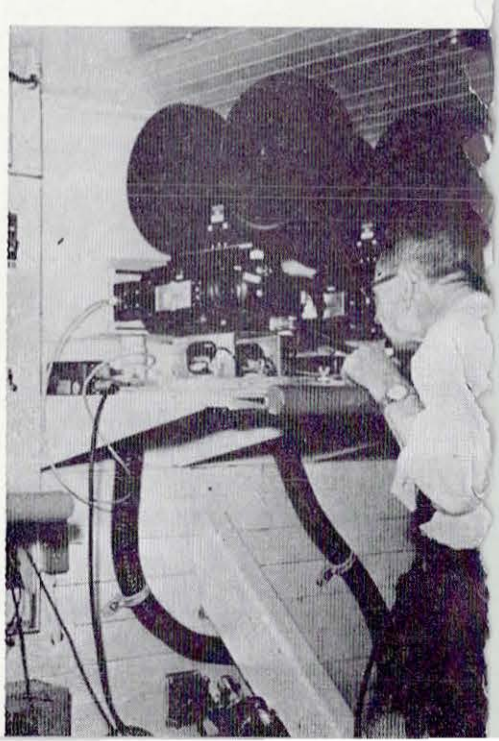
Movie scenes for the visual system were shot by SP cameramen using a non-functioning locomotive as the filming vehicle. Two 35-mm cameras, along with other recording and control devices, were mounted in a special photo housing installed on the front of the locomotive. An unusual air curtain was used with the optically-clear glass windows through which the scenes were shot, to keep off insects and dust. This curtain was very effective, says Steve Edwards, SP's supervisor of photography, and no scenes were lost due to the appearance of bugs or other debris on the filming windows.

● **Filming continues.** Eventually, SP expects to have a photographic record of key segments of its entire 14,000 mile system. When training sessions actually get under way next year, however, there will be just repre-



MOTION MAKER

Close-up of one of the motion systems pistons showing the maze of hydraulic lines needed to reproduce all of a locomotive's movements.



sentative scenes from all the road's divisions available. SP plans to continue to capture more of its territory on film for programming into training runs.

On the basis of present needs, SP figures it will have to train about 110 men per year for the next five years. These trainees will come to the engineer academy from divisions throughout the system, with some divisions supplying a greater number than others because their needs are greater.

"Attrition on some divisions will make heavy inroads on the supply of experienced engineers in a few short years," reports Dale Culbertson, former road foreman, engines, Tucson Division, who has been named manager of the engine service training section. "We'll fill their needs first and get things in balance."

Culbertson will be assisted by R. M. Clements, also a former road foreman-engines out of Tucson, and D. D. Grissom, former assistant manager-personnel for SP in Houston. Grissom, by the way, is a cousin of the late "Gus" Grissom, one of the nation's original astronauts who spent many an hour of training in another type of simulator.

The three-man training force has visited several airline locations where simulators are used to train and also upgrade pilots. In addition to observing the techniques used by simulator training personnel, they've also been studying classroom procedures. It's been determined now by SP personnel that, aside from training in the actual simulator, the over-all program at the Downey location will include classroom work on the SP's own Book of Rules, and discussions and movies about safety, railroad procedures and general operating rules, signals, air brakes, etc. Several visual aids will be employed, like an air brake test rack and an actual automatic block signal stand. Among textbooks selected for the program are the Air Brake Association's FREIGHT TRAIN HANDLING; Railway Fuel and Operating Officer's DIESEL ELECTRIC LOCOMOTIVE, 1969; THE ABC's of TRAIN OPERATION WITH CHALK TALKS; and the Air Brake Group's QUESTIONS AND ANSWERS ON 26 L BRAKE EQUIPMENT.

● **The buddy system.** To get the required 110 trainees through the course each year, SP has elected to start eight men every three weeks. Two-man teams—the buddy system—will be used, and these pairs will train together in all phases of the program. During actual simulator training, one member of the team will occupy the left-hand seat of the cab and call signals for his buddy in the engineman's seat. SP figures to have each man spend approximately two hours each day in the engineman's seat, two hrs. as the observer and, finally, two hrs. in the classroom. "We're not planning right now to go beyond six hours of training per day," says Culbertson. "It's felt that trying to crowd too much learning and too many new experiences into a short period would not be good for the trainees."

SP has in mind several uses for the simulator other than its just serving as the basic tool for training of engineers. It could be used for, say, the demonstrating and practicing of safety rules, or as a transitional trainer for engineers about to begin operation of trains of variable configurations and over unfamiliar routes. Also, it may be used for remedial training, or as part of a refresher course. It might also serve as an excellent tool in which to practice emergency procedures, or as a key research device in programs aimed at developing new techniques, procedures and equipment.

First of all, though, it will be serving as a training device for new engineers. In this capacity, Culbertson points out, it will be just that—a trainer. "It definitely won't be a wash-out device," he emphasized. "Just as is true in the airline industry, our simulator will be used merely to prepare the trainee to better qualify as an engineer in a real locomotive back on his own division."

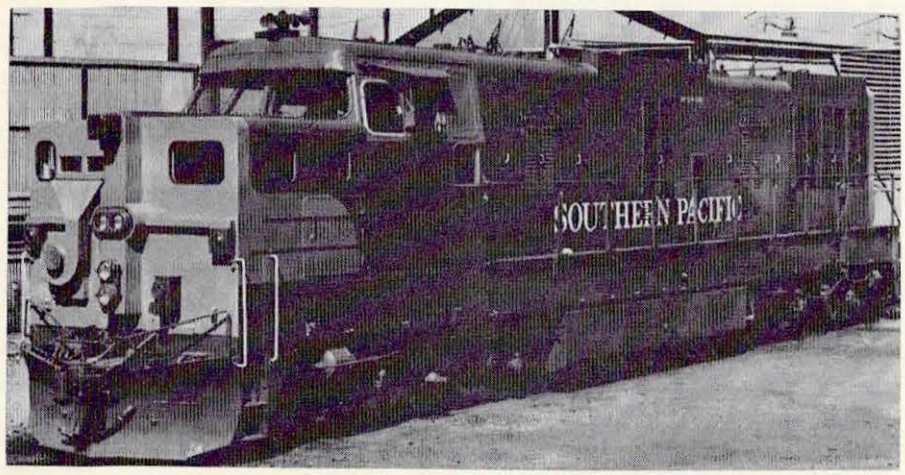
When trainees begin migrating back to their home territories after three weeks of training at the academy, they should be as well prepared as is possible for their on-the-job qualifications. One thing in their favor will be the standardized training they received under men competent in both locomotive operations and in instructing. Oftentimes in the past, a trainee learning his trade in the traditional way would find himself teamed up with a very good engineer who, unfortunately, turned out to be a poor instructor. This traditional way could take months, and even years, recalls President Biaggini. "And while the old way got the job done, it could be expensive, slow and sometimes unreliable," he added.

● **The value of simulation.** Because of the simulator, trainees will have to spend much less time in over-the-road training to qualify as engineers. The simulator will allow the student to examine the results of his own train handling mistakes, even to the extent of repeating a failure (such as a break-in-two) until he overcomes his deficiency. The simulator also offers opportunity to widen the range of the engineer's experience. Any number of critical decision points and hazardous situations can be presented.

Trainees fresh out of the simulator program will know their own skill level, and this level will be known by SP supervisors who will be conducting the on-the-job qualification of the trainee. The graduate trainee, because of the strong emphasis placed on safety throughout the proposed study course at the Downey academy, will unquestionably be safety-oriented.

With today's diesel locomotive units costing in the neighborhood of $300,000 each, and with the average train worth about $3½ million altogether, it makes good sense to allow a green trainee to get his first taste of a job in something less expensive and in which he can't harm anything or be harmed himself.

As SP's Culbertson sees it, the simulator represents a big step forward in the application of modern technology to get a very necessary job done. He sums it up this way: "We have the means for providing our future engineers with the proper training, the proper skills and the needed confidence to handle their jobs in this day of heavier trains and accelerated schedules, and thus guarantee the future." ■



PICTURE TAKER

35-mm cameras (left), mounted in de-activated diesel-hydraulic locomotive (above), filmed sections of Southern Pacific territory for simulator.

ALMOST A MILLION concrete crossties are in service in Mexico. Here is an installation of B-58, or Dywidag, concrete ties.

Why Mexico likes concrete ties

Their large-scale use stems from an increasing shortage of timber, plus big needs for maintenance and new construction.

The concrete crosstie, after many years of limited use and experimentation in the United States, is still a subject of controversy. Despite increasing difficulties in obtaining sufficient wood ties, few railroads are using the concrete tie on a regular basis.

Just across the border in Mexico, however, the story is entirely different. The National of Mexico (NdeM) has been making substantial installations of concrete ties since 1965. With the number now in service aproaching the million mark, the concrete tie has become an accepted feature of main-line track construction on the NdeM.

Now a new concrete tie manufacturing plant, with an initial capacity of 160,000 ties per year, has been built and is in operation at Monterrey, N.L. As if to underscore their acceptance of, and dependence on, the concrete tie, the Mexicans made a big event of dedication ceremonies for the new plant. Present to witness the ceremonies were some 300 railway officers, supply company representatives and public officials. Just as important in establishing the significance attached to the event is the fact that the central figure in the dedication ceremonies was the Mexican minister of transportation and communications, Ing. José Antonio Padilla Seguro.

● **Two main factors.** Why so much emphasis on the concrete tie in Mexico? Conversations with NdeM officers, both at the dedication ceremonies and later at the road's headquarters offices in Mexico, D. F., make it possible to piece together an answer. Behind the answer is a situation composed of two main factors. One is a growing scarcity in Mexico of forest growth suitable for use as crossties. The other is an expanded need for crossties produced by an aggressive improvement program involving, on the NdeM, both the construction of new lines and the upgrading of existing lines.

The general manager of the NdeM, Ing. Eufrasio Sandoval R., helps to fill in the picture with these words: "Year after year the wood tie is becoming more difficult to get, and its price is going up. Although it is treated with creosote, the wood tie has an average life in tropical zones of only six years. In semitropical zones the life is 10 years, while in desert sections of the country the average life is 15 years." The repeated spiking of

wood ties and the need for using anti-splitting devices with hardwood ties are other negative factors he mentions.

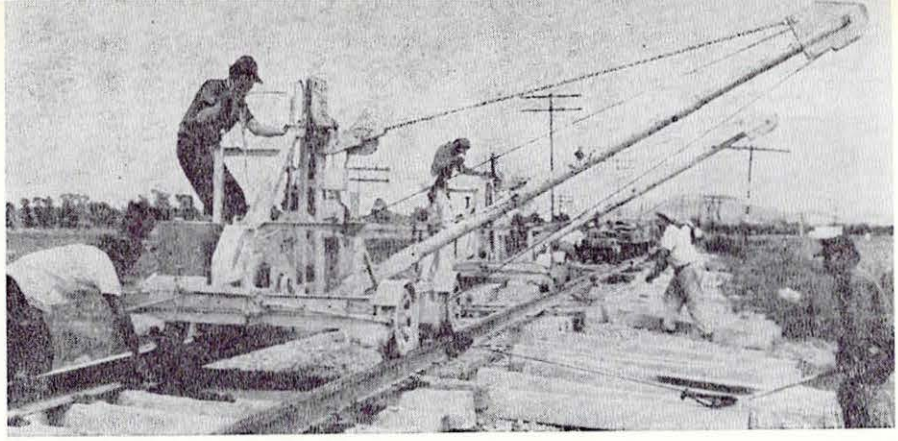
"Although the concrete tie costs 2.3 times as much as wood ties," Sandoval says, "the life of such ties, based on experience obtained in France and Germany, is from 50 to 60 years. Furthermore, the railroads in those countries have found out that with concrete ties the cost of maintaining tracks has dropped 40% compared with track laid with wood ties, which is a point of considerable economic importance to the railroads."

Ing. Mario Torres Jacobi, chief engineer, concurs and adds: "There is no doubt that the wood tie, when of hardwood, is a very good tie, especially during derailments, but our problem is that we have only softwood ties. I am very much in favor of the concrete tie, partly because its greater weight helps to add stability to the track."

● **Deficit: 400,000 ties.** Interviews with other NdeM engineering officers bring out additional information on the supply-demand situation with respect to wood ties. The tie-producing industry in Mexico, they say, can produce 1,200,000 crossties per year. These are mostly pine but include limited numbers of tropical hardwood ties. Against this, the NdeM needs 1,600,000 ties anually to meet its requirements for maintenance and upgrading of existing lines and the construction of new lines and line changes.

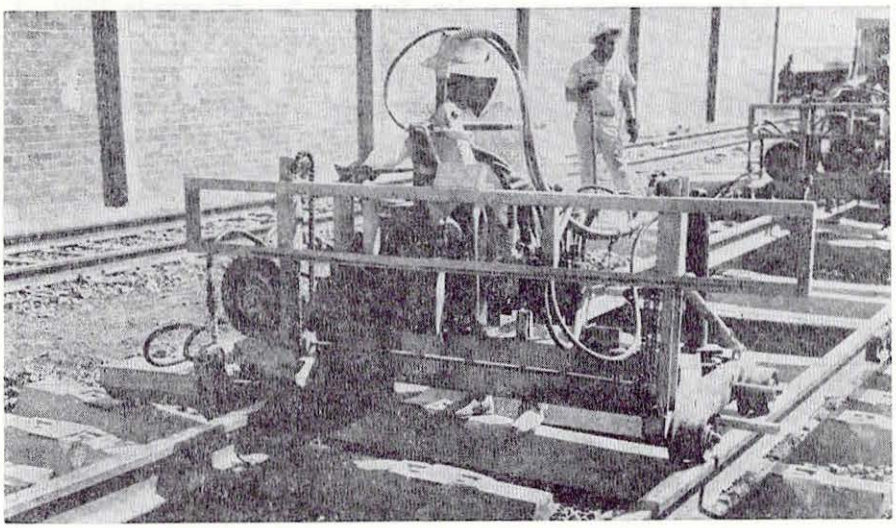
First installations of concrete ties were made in 1965. These were two-block ties of the French RS type. A plant for manufacturing them was established at Monterrey by the firm of Precolados del Norte. Later, NdeM engineers became interested in the B-58 tie of German origin. This is a post-stressed monoblock tie. A plant for manufacturing the tie, following the Dyckerhoff & Widmann system of reinforcement and manufacture, was built at Panzacola, Tlax., a point about 80 miles southeast of Mexico, D. F. This plant, with a capacity of 300,000 ties annually, went into production early in 1967. It was built by Impulsora Tlaxcalteca de Industrias, S. A. de C. V., a newly formed corporation with Ing. Pedro Dondisch G. as president.

● **Eyes on U.S. market.** Dondisch is also president of another new corporation—Industrial Huasteca, S. A. de C. V.—which built the new plant at Monterrey. That point was chosen for the plant because it is a likely center of distribution for the northern portion of the country, Dondisch explains. Any requirements for concrete ties that may arise in the southwestern part of the United States may also be met from that location, he points out.



THE MACHINES being used here to insert concrete ties are Nordberg Gandys.

MECHANIZATION SPEEDS THE WORK



MEXICO ALSO USES Tamper Tie Renewer machines to insert concrete crossties.

Capacity of the Monterrey plant can be increased by adding a second production line, Dondisch says. Beyond that, he is prepared to build an extension to the plant if this should be justified by the demand.

The B-58 tie, also known as the Dywidag tie, is manufactured in accordance with a system in which the concrete mix is placed in steel molds while they are receiving 9,000 vibrations per minute. Provision for the fastenings and holes for the stressing rods are cast into the concrete. The rods, in the form of two hairpin-shaped lengths of cold-rolled high-carbon steel, are inserted later from the same end and stressed to produce a tension of eight tons in each of the four strands, after which the holes are filled with grout under pressure.

● **T-type anchorage for bolts.** For use with the B-58 tie the Mexicans chose a clip-type fastening, known as the RN fastening, which is similar to that used with the RS tie. A feature of this fastening that is considered of particular importance is that the clip bolts have T-type anchorages in the tie. It is pointed out that such bolts may be easily replaced if this should become necessary because of corrosion or other reasons. This may be done simply by turning the bolt 90 degrees and lifting it out of the hole.

In the B-58 tie a rubber pad, grooved on both sides, is used under the rail. To hold them in position, the pads have raised edges which fit into grooves in the tie.

Still a third type of concrete tie has been used in Mexico in the construction of a line-relocation project. Known as the SL tie, this is a modification of the RS tie—the modification being a difference in the shape of the steel member connecting the two blocks of concrete. A plant for producing the SL tie was constructed by Precolados del Norte at Dolores Hidalgo, Gto., convenient to the relocated line.

● **Welded rail, too.** Along with concrete ties, the NdeM has gone in for continuous welded rail at least for use on the more important lines. It has settled on a type of construction involving continuous welded rail laid on concrete ties spaced 24 inches apart. New rails are welded into 1300-foot lengths at an NCG plant at San Luis

LUTHER MILLER

AS THE EDITOR SEES IT

THE SOUND AND THE FURY in the railway marketplace this year have been awesome to hear and terrible to behold. At Railway Age, we began the year optimistically enough with the prediction that orders for new freight cars in 1969 would be "in excess of 70,000." Then the sky fell in. With money already in tight supply, the President asked for repeal of the 7% investment tax credit. Freight traffic fell below predicted levels. The passenger-train problem got no better. Washington failed, again, to take substantive action on long-standing grievances of the railroads. Now we are ending the year—with the announcement, by the American Railway Car Institute, that by Dec. 31 orders for new freight cars will have amounted to around 72,000.

THE MORAL OF THIS TALE is not that the railroad plight was exaggerated during the year. It is simply that railroads still have great vitality—and that those who hear only the mournful sounds, and observe only the fury, should not draw unduly pessimistic conclusions therefrom. Railroads should have ordered 100,000 new cars this year; they could not and did not. But the fact that they did order 72,000—more than $1 billion worth—is evidence of a long-range confidence in the future that is all too often obscured by the problems of the present.

HAS IT REALLY BEEN SUCH A BAD YEAR? Bad enough. But the sheer weight of publicity that has been given to railroad problems this year offers some grounds for optimism. It is true that deficit passenger trains are a more serious drain than ever—but Congress is, at last, beginning to face up to the problem and is considering a subsidy. It is also true that the loss of the tax credit was a severe blow to railroads—but it did serve to bring forcefully to the attention of Congress the dimensions of the railroad capital-investment problem. As a result, Congress is considering new tax incentives that could be of lasting benefit.

THE AMERICAN RAILWAY CAR INSTITUTE, in its earlier-than-expected release of carbuilding forecasts last week (p. 11), may have been trying to help stem the tide of defeatism that is lapping at the industry. ARCI did say that carbuilding next year will be down—but "down" to a still respectable 60-odd thousand. Railroads themselves are sometimes down—but they should seize every occasion, as ARCI did, to remind themselves and their customers that they are far from out.

Potosi, S.L.P. A second plant of the same type is soon to go into operation at Monclova, Coah. After installation in track, the welded strings are joined by welds of the alumino-thermic type.

Present practice on the NdeM is to use the concrete ties only in new construction or in the rehabilitation of existing lines where the entire track is renewed. They are not interspersed with wood ties. Wood ties are still used on curves of 5 degrees or more on new lines or on rehabilitation jobs.

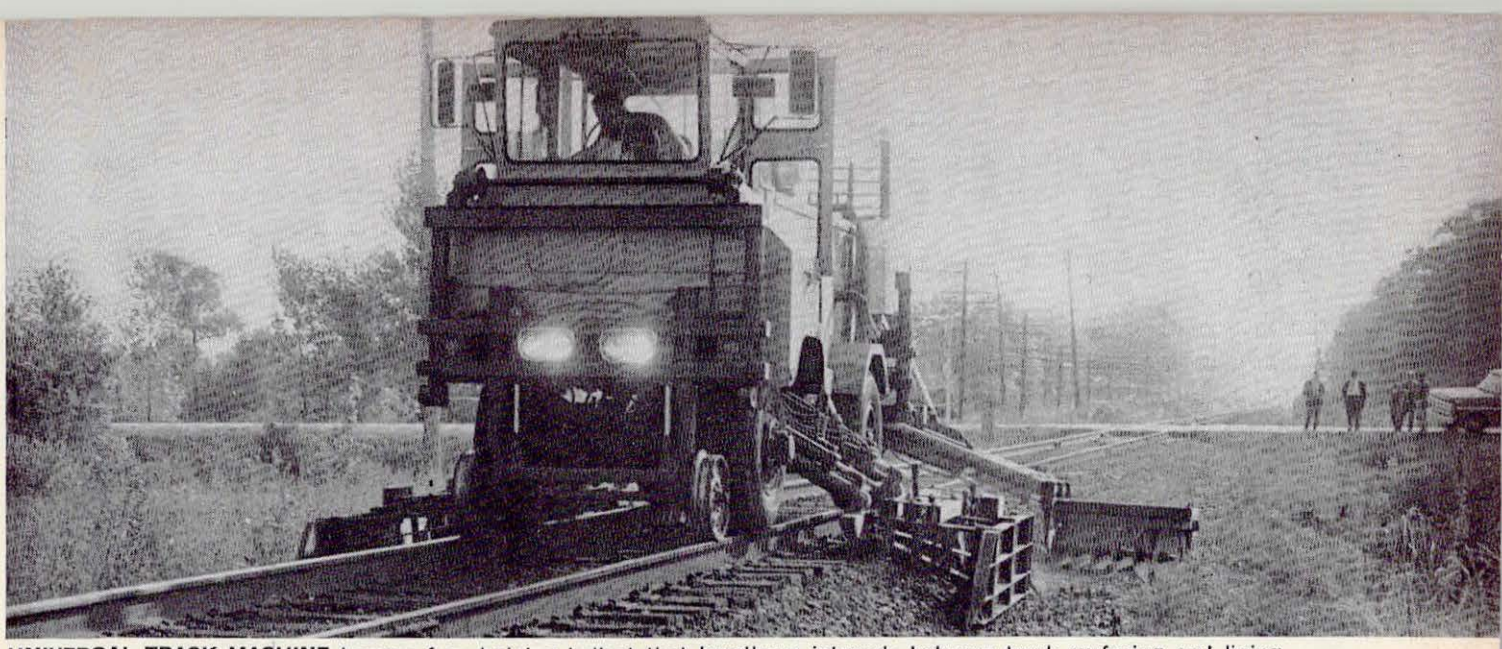
Where concrete ties are being installed as part of a rehabilitation project, the ties are unloaded on the track shoulder and then, using existing types of equipment, the wood ties are removed to one side of the track while the concrete ties are inserted from the other. The welded rails, having been unloaded alongside the track, are exchanged for the old rails which, still connected by angle bars, are loaded on the same train which delivered the new rails.

When constructing new tracks with concrete ties and welded rail, the Mexicans build the new line in increments of slightly more than six miles, using what they call a "penetration" track. This is built with secondhand bolted rails placed on wood ties spaced about five feet apart, explains Pablo Moreno, assistant chief engineer of NdeM. Operating from this track, a Burrow crane unloads the concrete ties seven at a time. A Nordberg Gandy is then used to insert the concrete ties in the penetration track and the wood ties are removed with the same equipment. The new long rails are unloaded alongside the penetration track and exchanged for the second hand rails which are used in constructing the next increment of penetration track.

● **Secmafer equipment coming.** For use both in building new lines and in rehabilitating existing track, the NdeM was expecting delivery in November of a set of equipment built by the French firm of Secmafer, S. A. This equipment, riding on the new welded rails positioned on the track shoulders, takes up the old track in panels and loads them on a flat car. The equipment then places the concrete ties on the levelled roadbed to the desired spacing.

The Secmafer equipment is designed especially for use in reconstructing existing track, It can also be used in building new trackage. In that case, of course, a penetration track will still be required. The expectation among the Mexicans is that the Secmafer equipment will introduce a higher level of efficiency into their operations.

The NdeM now has in service about 400,000 Dywidag ties, 150,000 RS ties and 250,000 SL ties. All of the SL ties have been installed in a single line-change project. ■



UNIVERSAL TRACK MACHINE insures free-draining ballast that lengthens intervals between track surfacing and lining.

New unit does an old job faster

Discing the shoulders of stone-ballasted track is one of the oldest practices involved in maintaining track. Trackmen have found that churning the stone sifts out the dirt, to open up drainage. It discourages weed growth, and it reduces the labor necessary to maintain surface and line.

With its tracks ballasted with either crushed-stone or slag ballast, Norfolk & Western has been discing its ballast shoulders for several years. This work has been carried out with on-track machines which work one shoulder at a time.

Last year, in addition to using the original discing units, N&W began using a unit called the Universal Track Machine for discing. This year, it has three of the machines working ballast on 2,500 to 3,000 miles of track. The distance depends upon the time that the track will freeze up. As E. Q. Johnson, chief engineer for the N&W, explains it, "This machine will work the ballast on both sides of the track in one pass. We plan to use these units on an annual basis to keep the shoulder ballast loose and the fines sifted out, and to break up the mud packs that tend to form at the ends of the ties.

"We believe this practice will not only prolong the service life of the ballast but also lengthen the intervals in which the track must be surfaced and lined. The machine also discs the toe path and keeps down the weeds, which permits our weed-spraying chemicals to be effective over more miles of track."

BALLAST SLOPE is produced by pantograph on machine's ballast box wing.

● **What it is.** The Universal Track Machine, from the Railway Products Division of the Marmon Group, Inc., is a highway-railroad unit. It can move over the highways faster than 45 mph without the need for a license or special permit, the manufacturer says. On the rails, it works at a speed of from ½ to 15 mph. It is comprised of a prime mover and a number of attachments that can be interchanged to enable it to carry out several track-maintenance operations. The attachments include a front-end plow, reversible track broom, two-directional ballast shoulder boxes with discs, toe-path discs and a tie-end undercutting tooth.

An outstanding feature of the prime mover is its tractive effort. This enables it to perform with discs working both track shoulders simultaneously. When working on the rails, only 25% of the 32,000-pound gross weight of the machine is on the rail-guide wheels. The pneumatic-tired wheels produce over 17,000-pound tractive effort, according to the manufacturer.

● **How the N&W uses it.** When observed working on the Chicago Terminal portion of N&W's Ft. Wayne division near Hobart, Ind., the prime mover of the UTM was equipped only with the ballast box wings, undercutter teeth and toe-path discers. G. E. Emery, division engineer, said he planned to work the machine out of face to Calumet, Ind., aproximately 25 miles. This track had not been raised and surfaced since 1966 but, because the ballast had been disced annually, the stone on the shoulders remained in a relative-clean condition.

N&W acquired the services of these machines on a lease-contract basis, whereby the railroad furnishes the operator and the Marmon Group supplies a mechanic who services each unit, keeps it in operable condition and instructs the operator.

Radio communications are utilized to keep in touch with oncoming trains. Production has averaged approximately 1.5 to 1.75 miles per on-track hour. When necessary to clear the track for trains, the machine is run to the nearest crossing, the guide and wheels are raised hydraulically. In less than a minute, the unit is driven into the clear. Because of its rapid removal, the machine is worked whenever 15 minutes or more time is available. ■

Third Quarter and Nine Months' Figures of Calendar Year 1969

(Dollar figures are stated in thousands: i.e., with last three digits omitted)

REVENUES AND EXPENSES OF RAILWAYS

Name of Road		Average mileage operated during period	Operating Revenues: Freight	Pass.	Total (inc. misc.) 1969	1968	Operating Expenses: Maint. Way and Structures: Total 1969	Total 1968	Deprec. and Retirements	Maint. Equipment: Total 1969	Total 1968	Deprec. and Retirements	Traffic	Transportation	Total 1969	Total 1968	Operating ratio 1969	1968	Net from railway operation	Railways tax accruals	Net Railway operating income 1969	1968
Akron, Canton & Youngstown	3 mos.	171	1,990	—	2,065	1,977	396	288	25	350	388	127	119	815	1,768	1,546	85.6	78.2	297	97	223	283
	9 mos.	171	5,812	—	6,023	6,029	926	819	62	1,038	1,154	385	354	2,209	4,856	4,703	80.6	78.0	1,167	584	752	903
Ann Arbor	3 mos.	293	2,192	—	2,377	2,541	443	426	21	454	457	127	70	1,187	2,243	2,175	94.4	85.6	134	196	—190	—1
	9 mos.	293	6,916	—	7,191	6,967	1,092	872	69	1,340	1,341	405	208	3,680	6,547	6,028	91.1	86.5	644	578	—494	—187
Atchison, Topeka & Santa Fe	3 mos.	12,908	158,028	7,003	176,748	167,552	28,334	29,717	2,604	34,023	34,207	10,561	4,713	71,137	148,373	143,847	84.0	85.9	28,375	13,336	8,489	7,031
	9 mos.	12,892	478,580	17,611	530,843	497,110	78,313	81,963	7,517	102,598	104,669	32,233	14,156	202,938	424,874	416,976	80.0	83.9	105,969	49,522	45,181	30,501
Baltimore & Ohio	3 mos.	5,606	104,730	1,125	112,217	113,150	15,200	14,900	1,690	16,339	17,004	2,509	2,774	45,104	86,615	85,523	77.2	75.6	25,602	7,793	4,266	5,504
	9 mos.	5,612	322,491	2,837	342,486	332,472	43,700	41,400	5,091	53,810	50,434	7,744	8,675	131,727	258,620	247,942	75.5	74.6	83,865	23,805	20,353	16,939
Bangor & Aroostook	3 mos.	543	2,416	71	2,549	2,694	616	558	72	1,023	1,052	410	80	936	2,899	2,795	113.7	103.8	—350	290	319	399
	9 mos.	543	9,722	202	10,137	10,331	2,426	2,305	208	3,225	3,224	1,231	251	3,283	9,905	9,793	97.7	94.8	232	896	1,439	1,535
Bessemer & Lake Erie	3 mos.	221	10,927	—	11,543	11,681	1,616	1,422	149	1,532	851	502	156	2,472	6,524	5,612	56.5	48.0	5,019	2,545	2,625	2,792
	9 mos.	221	25,816	—	27,451	29,209	3,640	3,237	405	4,522	3,174	1,242	463	6,770	17,450	15,593	63.6	53.4	10,000	5,941	5,639	6,053
Boston & Maine	3 mos.	1,531	13,714	1,155	16,394	16,708	2,251	2,100	409	2,755	2,592	640	375	7,680	14,016	13,802	85.5	82.6	2,378	1,270	—554	—116
	9 mos.	1,531	43,475	3,629	51,583	49,991	7,398	6,491	1,249	8,429	7,860	1,926	1,114	23,727	43,517	41,235	84.4	82.5	8,066	3,887	—1,851	—556
CPR Lines in Maine	3 mos.	234	1,129	67	1,247	1,340	418	341	61	177	176	47	59	470	1,247	1,118	100.0	83.4	—	84	—309	—86
	9 mos.	234	5,910	170	6,227	4,950	1,045	916	184	770	710	140	176	1,664	4,045	3,599	65.0	72.7	2,181	243	991	301
Central of Georgia	3 mos.	1,729	12,299	204	12,845	12,869	2,262	2,575	213	2,435	2,414	747	306	4,640	10,593	10,731	82.5	83.4	2,252	904	499	1,141
	9 mos.	1,729	38,656	617	40,364	38,218	8,549	7,712	600	7,305	7,666	2,251	911	14,237	34,755	32,798	86.1	85.8	5,609	2,679	328	2,401
Central RR of New Jersey	3 mos.	593	10,857	1,042	13,796	12,638	1,620	1,641	269	2,083	1,852	354	292	6,689	11,608	10,992	84.1	87.0	2,188	1,167	—800	—1,275
	9 mos.	593	31,070	2,960	39,445	38,297	4,580	4,615	793	6,329	6,188	1,104	892	19,496	33,949	33,479	86.1	87.4	5,496	3,437	—3,647	—3,810
Central Vermont	3 mos.	382	1,980	4	2,067	2,017	451	405	61	148	241	12	30	874	1,702	1,669	82.3	82.7	365	163	199	—80
	9 mos.	382	6,495	4	6,709	6,119	1,317	1,342	171	643	773	37	91	2,622	5,215	5,340	77.7	87.2	1,494	486	21	—562
Chesapeake & Ohio	3 mos.	5,091	94,610	681	101,276	101,898	13,700	11,300	1,551	18,664	18,642	6,081	2,835	40,576	81,914	79,764	80.9	78.3	19,362	8,977	8,350	11,095
	9 mos.	5,101	287,380	1,757	303,761	298,707	36,700	33,400	4,638	58,487	57,999	18,551	8,313	121,288	242,654	236,727	79.9	79.3	61,107	28,275	26,241	32,900
Chicago & Eastern Illinois	3 mos.	643	6,253	—	6,408	11,034	1,608	2,261	172	1,348	2,062	323	347	2,294	6,067	9,470	94.7	85.8	341	304	—948	—1,032
	9 mos.	740	29,281	39	30,763	34,652	6,258	5,978	557	5,503	6,495	1,383	1,121	10,598	25,024	28,739	81.3	82.9	5,739	1,327	—32	—1,507
Chicago & Illinois Midland	3 mos.	121	645	—	699	937	141	103	21	212	212	36	7	306	773	786	110.6	83.8	—74	56	—102	6
	9 mos.	121	2,838	—	2,962	3,488	358	322	63	661	618	107	20	964	2,335	2,369	78.8	67.9	627	549	75	337
Chicago & North Western	3 mos.	11,505	65,941	5,692	74,431	68,208	11,155	10,768	1,359	11,907	11,117	4,298	2,090	32,722	62,297	59,253	83.7	86.9	12,135	5,677	—1,721	—2,261
	9 mos.	11,537	185,941	16,140	210,711	204,275	31,979	30,643	4,366	37,717	34,799	12,691	6,664	93,666	184,679	174,328	87.6	85.3	26,032	17,517	—13,001	—1,394
Chicago, Burlington & Quincy	3 mos.	8,458	64,545	4,472	74,396	71,336	11,240	10,008	1,335	13,378	12,300	4,186	2,275	31,691	62,916	58,187	84.6	81.6	11,480	5,584	1,637	5,235
	9 mos.	8,458	190,814	12,125	218,898	206,155	30,564	28,005	3,932	39,749	37,143	12,767	6,627	91,531	181,054	169,612	82.7	82.3	37,844	17,670	9,305	13,040
Chic., Milw., St. Paul & Pacific	3 mos.	10,479	61,190	2,861	69,229	67,424	13,351	12,050	1,175	10,787	10,796	3,224	1,822	28,765	59,082	57,857	85.3	85.8	10,147	5,010	—2,204	—1,387
	9 mos.	10,490	179,213	7,876	201,660	198,977	34,707	28,965	3,921	33,963	31,852	9,770	5,719	86,652	174,074	163,261	86.3	82.1	27,586	17,272	—7,935	4,877
Chicago, Rock Island & Pacific	3 mos.	7,264	60,373	1,414	64,416	57,220	10,373	9,210	1,539	9,578	10,062	1,730	1,764	28,287	53,134	49,997	82.5	87.4	11,282	4,728	—3,454	—5,490
	9 mos.	7,266	179,939	4,307	192,364	176,923	30,485	25,996	4,381	31,133	30,082	5,428	5,430	83,380	160,178	146,766	83.3	83.0	32,186	14,365	—9,672	—7,648
Clinchfield	3 mos.	306	7,976	28	8,071	7,396	745	782	73	1,138	1,155	601	246	2,197	4,595	4,515	56.9	61.0	3,476	714	3,011	2,412
	9 mos.	306	24,396	45	24,623	22,503	2,410	2,437	218	3,608	3,597	1,823	747	6,548	14,136	13,810	57.4	61.4	10,488	2,233	8,625	7,078
Colorado & Southern	3 mos.	692	4,664	—	4,775	4,250	501	542	77	657	653	303	72	1,691	3,259	2,969	68.3	69.9	1,516	498	727	785
	9 mos.	697	12,863	—	13,166	12,081	1,440	1,336	154	1,995	2,032	914	213	4,475	9,011	8,217	68.4	68.0	4,155	1,407	2,170	2,327
Ft. Worth & Denver	3 mos.	1,280	4,213	—	4,421	4,149	621	660	125	533	679	115	187	2,142	3,896	3,881	88.1	93.5	525	144	—40	—552
	9 mos.	1,280	12,513	—	13,070	14,200	1,937	1,899	308	1,584	1,872	343	563	5,822	10,971	11,211	83.9	79.0	2,099	560	272	224
Delaware & Hudson	3 mos.	751	10,313	219	10,816	9,980	1,661	1,806	113	1,820	1,916	389	357	4,144	8,731	8,771	80.7	87.9	2,085	1,314	774	5
	9 mos.	740	32,610	550	34,059	31,060	4,239	4,723	336	5,762	6,387	1,164	1,055	12,377	25,722	26,168	75.5	84.2	8,338	3,924	4,040	1,367
Denver & Rio Grande Western	3 mos.	2,120	23,132	874	24,724	23,465	2,634	2,585	543	3,666	3,823	1,350	875	8,472	17,106	16,375	69.2	69.8	7,618	4,207	3,443	3,320
	9 mos.	2,120	69,648	1,585	72,792	68,320	7,629	7,599	1,354	11,139	109,24	4,048	2,655	24,266	50,029	47,635	68.7	69.7	22,763	11,918	10,449	10,271
Detroit & Toledo Shore Line	3 mos.	50	1,317	—	1,426	1,523	191	129	62	274	280	112	66	558	1,190	1,164	83.4	76.4	236	87	144	128
	9 mos.	50	4,754	—	5,130	4,972	603	410	107	821	789	336	201	1,857	3,805	3,535	74.2	71.1	1,325	508	537	361
Detroit, Toledo & Ironton	3 mos.	467	6,572	—	6,873	5,975	689	626	89	1,583	1,179	631	233	2,771	5,753	4,818	83.7	80.6	1,120	638	—328	68
	9 mos.	467	22,041	—	23,017	20,987	1,960	1,813	261	4,306	4,017	1,900	690	8,210	16,521	15,146	71.8	72.2	6,496	1,827	2,393	2,353
Duluth, Missabe & Iron Range	3 mos.	508	15,196	—	16,754	14,321	1,984	1,769	713	1,436	1,320	548	50	3,456	7,853	7,173	46.9	50.1	8,901	5,374	3,671	3,055
	9 mos.	511	30,759	—	33,593	28,908	4,349	4,743	1,146	4,468	3,957	1,641	155	8,104	19,698	18,921	58.6	65.6	13,895	9,434	5,063	4,153

Third Quarter and Nine Months' Figures of Calendar Year 1969

(Dollar figures are stated in thousands: i.e., with last three digits omitted)

Name of Road		Average mileage operated during period	Freight	Operating Revenues Pass.	Total (inc. misc.) 1969	Total (inc. misc.) 1968	Operating Expenses: Maint. Way and Structures Total 1969	Maint. Way and Structures Total 1968	Maint. Way and Structures Deprec. and Retirements	Maint. Equipment Total 1969	Maint. Equipment Total 1968	Maint. Equipment Deprec. and Retirements	Traffic	Transportation	Total 1969	Total 1968	Operating ratio 1969	Operating ratio 1968	Net from railway operation	Railways tax accruals	Net Railway operating income 1969	Net Railway operating income 1968
Duluth, Winnipeg & Pacific	3 mos.	170	2,013	—	2,045	1,999	292	256	17	304	299	2	45	795	1,520	1,458	74.3	72.9	525	15	260	—2
	9 mos.	170	6,456	—	6,554	6,906	911	759	49	699	705	7	134	2,390	4,341	4,120	66.2	59.7	2,213	931	374	727
Elgin, Joliet & Eastern	3 mos.	205	9,262	—	15,155	12,568	1,764	1,600	104	2,251	2,033	443	178	5,722	11,516	9,961	76.0	79.3	3,639	2,103	580	285
	9 mos.	205	28,714	—	45,319	42,429	4,774	4,274	310	6,988	7,034	1,502	541	17,415	34,367	31,566	75.8	74.4	10,952	6,122	1,925	2,061
Erie Lackawanna	3 mos.	2,884	52,998	2,797	61,248	61,050	8,412	8,322	727	10,080	9,343	1,859	1,374	29,187	51,792	49,401	84.6	80.9	9,456	5,204	—1,604	1,654
	9 mos.	2,891	163,423	8,486	187,844	180,686	22,393	21,387	2,320	29,974	30,097	5,530	4,036	84,714	149,474	146,950	79.6	81.3	38,370	14,910	7,091	2,830
Florida East Coast	3 mos.	571	6,136	—	6,368	5,281	1,389	2,231	181	908	714	283	192	1,886	4,747	4,882	74.5	92.4	1,621	188	533	—366
	9 mos.	571	22,004	—	22,544	18,304	6,310	5,305	609	3,121	2,814	845	591	6,027	17,335	14,541	76.9	79.4	5,209	1,736	581	—196
Georgia Railroad	3 mos.	331	2,403	6	2,524	2,456	357	342	13	413	402	105	134	920	1,972	1,948	78.1	79.3	552	150	216	248
	9 mos.	331	7,058	23	7,461	7,355	1,110	1,058	87	1,238	1,246	310	409	2,663	5,870	5,967	78.7	81.1	1,590	454	635	472
Grand Trunk Western	3 mos.	946	15,220	593	17,093	15,808	2,678	2,312	195	2,782	2,375	196	473	10,461	17,569	15,129	102.8	95.7	—476	1,839	—6,491	—4,559
	9 mos.	946	50,354	1,600	55,610	51,648	7,050	6,070	561	8,124	7,319	586	1,364	30,057	50,036	43,375	90.0	84.0	5,574	5,303	—12,984	—6,770
Great Northern	3 mos.	8,275	73,352	2,683	80,666	67,935	12,513	11,513	1,160	12,185	11,970	3,283	2,197	29,548	61,488	57,455	76.2	84.6	19,178	9,033	9,140	3,363
	9 mos.	8,275	198,414	6,609	217,190	193,762	34,748	30,255	3,547	36,381	34,215	10,367	6,219	85,937	177,574	161,962	81.8	83.6	39,616	22,923	14,913	11,011
Gulf, Mobile & Ohio	3 mos.	2,734	22,664	509	24,434	23,445	3,611	3,067	301	4,754	4,692	1,342	907	8,369	18,779	17,882	76.9	76.3	5,655	2,200	2,220	2,088
	9 mos.	2,734	68,893	1,406	74,124	71,640	10,225	9,131	892	14,377	13,663	4,079	2,714	25,161	55,790	52,831	75.3	73.7	18,334	6,837	7,509	7,669
Illinois Central	3 mos.	6,777	68,629	6,384	79,569	73,831	11,315	10,096	1,301	14,053	14,115	4,326	2,067	30,811	63,711	60,477	80.1	81.9	15,858	7,340	4,596	2,553
	9 mos.	6,783	205,061	17,117	234,421	225,738	31,224	29,787	4,330	40,128	41,495	12,541	6,415	90,878	184,509	181,424	78.7	80.4	49,912	23,207	15,811	10,754
Illinois Terminal	3 mos.	340	2,185	—	2,538	2,579	277	322	12	393	539	102	74	1,076	2,001	2,152	78.9	83.5	537	205	12	—123
	9 mos.	340	6,714	—	7,605	7,354	853	949	34	1,374	1,487	322	209	3,188	6,189	6,254	81.4	85.0	1,416	614	—143	—514
Kansas City Southern	3 mos.	1,684	19,445	177	20,871	19,368	2,363	2,588	214	3,324	3,032	1,205	797	7,233	14,802	13,819	70.9	71.4	6,070	1,844	2,423	2,151
	9 mos.	1,684	57,381	448	61,574	58,825	7,051	7,124	694	9,726	9,238	3,616	2,335	20,650	42,679	41,039	69.3	69.8	18,896	5,981	7,790	7,127
Kansas, Oklahoma & Gulf	3 mos.	205	1,181	—	1,191	1,117	229	155	10	275	299	186	77	292	944	877	79.3	78.5	247	118	520	650
	9 mos.	207	3,719	—	3,731	3,678	514	458	35	821	981	552	249	905	2,676	2,872	71.7	78.1	1,055	392	1,852	1,748
Lake Superior & Ishpeming	3 mos.	130	2,441	—	2,898	2,215	306	367	69	410	379	185	11	689	1,553	1,455	53.6	65.7	1,345	657	700	305
	9 mos.	130	4,383	—	5,307	5,159	816	933	205	1,116	1,100	563	32	1,510	3,797	3,800	71.5	73.7	1,510	491	625	542
Lehigh Valley	3 mos.	942	11,835	—	12,252	11,616	1,389	1,513	250	1,665	1,664	358	420	5,855	10,053	10,059	82.1	86.6	2,199	970	—253	—999
	9 mos.	944	35,167	—	36,515	34,750	4,265	4,377	757	4,899	5,033	1,033	1,238	17,899	30,547	30,405	83.7	87.5	5,968	2,940	—2,487	—3,426
Long Island	3 mos.	322	2,260	18,747	22,010	21,531	3,104	2,337	264	5,971	5,380	1,019	213	13,505	24,583	21,334	111.7	99.1	—2,573	1,672	—5,242	—2,464
	9 mos.	322	6,842	56,127	65,713	64,961	8,737	7,205	826	17,111	15,453	2,217	663	39,942	71,252	63,519	108.4	97.8	—5,539	4,740	—13,531	—5,912
Louisiana & Arkansas	3 mos.	Included in Kansas City Southern																				
	9 mos.	Included in Kansas City Southern																				
Louisville & Nashville	3 mos.	6,065	83,281	471	86,557	73,552	13,919	9,823	1,255	18,232	15,720	6,670	2,060	32,399	71,319	59,307	82.4	80.6	15,238	7,241	7,077	8,543
	9 mos.	5,946	238,805	1,270	248,333	224,145	36,124	30,208	3,757	51,389	47,195	19,370	6,033	91,243	198,826	179,594	80.1	80.1	49,507	20,664	26,377	24,478
Maine Central	3 mos.	921	5,824	—	5,918	5,738	1,178	1,050	87	1,259	1,182	289	112	2,342	5,277	4,842	89.2	84.4	640	468	—64	237
	9 mos.	921	18,708	—	19,043	18,026	3,870	3,118	262	3,921	3,648	872	365	7,203	16,538	14,711	86.8	81.6	2,504	1,385	268	1,180
Missouri Illinois	3 mos.	334	1,648	—	1,669	1,611	239	233	9	639	540	352	18	399	1,375	1,238	82.4	76.9	293	265	962	1,006
	9 mos.	400	5,020	—	5,089	5,170	702	628	53	1,878	1,642	1,054	63	1,141	4,003	3,673	78.7	71.0	1,086	860	3,037	3,240
Missouri-Kansas-Texas	3 mos.	2,772	16,211	—	16,937	15,495	2,769	2,585	347	1,965	2,200	453	823	6,520	12,951	12,481	76.5	80.5	3,987	1,348	—640	—1,478
	9 mos.	2,778	47,794	—	49,634	48,589	7,621	7,101	923	6,055	6,224	1,366	2,552	18,909	37,697	36,004	76.0	74.1	11,937	3,976	—624	—525
Missouri Pacific	3 mos.	8,931	80,358	553	85,489	82,544	13,110	13,899	1,226	14,275	14,044	3,713	2,081	31,412	64,997	63,844	76.0	77.3	20,492	6,144	5,809	5,173
	9 mos.	8,950	243,224	1,396	258,631	243,535	40,560	37,546	4,110	42,439	39,989	10,696	6,225	91,286	192,879	181,889	74.6	74.7	65,751	19,283	20,996	20,135
Monon	3 mos.	540	4,981	—	5,237	5,398	774	839	98	807	799	134	240	2,129	4,361	4,200	83.2	77.8	876	380	—88	244
	9 mos.	540	16,180	—	16,929	15,651	2,359	2,090	218	2,493	2,435	608	745	6,288	13,086	12,105	77.2	77.3	3,843	1,227	668	954
Monongahela	3 mos.	193	1,036	—	1,045	1,224	344	570	32	184	227	35	4	379	973	1,235	93.1	100.9	72	81	—365	—398
	9 mos.	193	3,751	—	3,781	4,374	956	1,286	99	644	572	102	10	1,249	3,013	3,359	79.7	76.8	768	249	—454	—291
New York, New Haven & Hartford	3 mos.	Included in Penn Central Co.																				
	9 mos.	Included in Penn Central Co.																				
Norfolk & Western	3 mos.	7,585	158,053	472	165,451	159,287	21,115	17,816	2,557	26,774	25,570	11,370	3,836	60,842	120,849	112,333	73.0	78.5	44,601	9,856	27,165	27,536
	9 mos.	7,585	481,879	1,362	502,690	477,592	55,021	49,392	7,556	81,180	76,105	34,368	11,120	180,354	351,402	331,915	69.9	69.5	151,288	46,292	83,157	79,870
Norfolk Southern	3 mos.	624	2,724	—	2,791	2,926	509	435	71	465	467	177	159	1,002	2,407	2,247	86.1	76.8	384	240	—42	274
	9 mos.	624	8,760	—	8,925	8,347	1,680	1,352	219	1,422	1,311	532	480	2,954	7,390	6,510	83.0	77.9	1,535	704	218	621

(Concluded on page 28)

How come our warranty is the only one that looks

PARTS REPLACEMENT AGREEMENT

THIS AGREEMENT is between **THE TIMKEN ROLLER BEARING COMPANY (hereinafter called the "Company") and _____ (hereinafter called the "Customer"), and is made effective _____ 19____**

In consideration of the purchase by the Customer, on or after the effective date of this Agreement, of Timken® "AP" bearings, for use on railroad freight car applications, the Company hereby agrees as follows:

1. On any Timken "AP" bearing assembly purchased by the Customer during the term of this Agreement for use on freight car applications, the Company will replace or repair, free of charge other than any applicable inspection or service charge otherwise payable and Customer's portion of transportation, any of the parts specified in paragraph 5 below which, within 84 months of the original date of manufacture etched or stamped on the bearing, are found to be in such condition as to require replacement or repair to comply with the standards set forth in the Roller Bearing Manual of the Association of American Railroads as of January 1, 1969. If cup or cone surfaces show evidence of Brinell or fatigue due to normal wear or loading, to the extent that they are not suitable for continued service under standards set forth in the Roller Bearing Manual, the inspection charge otherwise payable will also be waived. If the Roller Bearing Manual should require, or the Customer should specify, that certain parts of the bearing assembly be replaced when the bearing is reassembled, even though such parts are in good condition, the Customer will be charged for the replacement of such parts.

2. The provisions of paragraph 1 above shall also apply, subject only to the 84 months' limitation, to any Timken "AP" bearings purchased by the Customer prior to the effective date of this Agreement.

3. To qualify for replacement of parts under this Agreement, the following requirements must be met, to the best of the knowledge and belief of the Customer and to the satisfaction of the Company:
   a. The condition requiring replacement must be attributable to the quality of material or workmanship in the manufacture of the bearing, and must not be due to damage from derailment, fire, immersion in or exposure to water.
   b. The complete bearing assembly (less axle and cap assembly) including all parts as removed from the axle for inspection must be forwarded to the Company, f.o.b. Columbus, Ohio, fully assembled, and with suitable packaging and/or blocking to prevent damage in shipment and handling, within 84 months of the original date of manufacture, as specified above, with identification of the Customer by or for whom the bearing is being forwarded.
   c. The bearing assembly must have been in use on a freight car operated and maintained in accordance with loading and other rules and standards of the Association of American Railroads for cars in interchange service.
   d. There must not have been any modifications or alterations of the bearing assembly, unless authorized in writing by the Company, nor any improper repairs or any substitution in the bearing assembly of bearing components made by another manufacturer.

4. Following inspection and repair or replacement of parts in accordance with this Agreement, the complete bearing assembly (less axle and cap assembly) will be returned by the Company to the Customer, f.o.b. Columbus, Ohio, subject to such freight allowances as the Company may from time to time establish applicable to all customers of the same class.

5. The bearing parts which are covered by this Parts Replacement Agreement are the cones, cup, cone spacer, seals, seal wear rings, backing rings and vent fittings. Other parts of the bearing assembly - axle end cap, cap screws, locking plate and lubricant fitting - are covered by the warranty referred to in paragraph 6 below.

6. This Parts Replacement Agreement supplements the warranty set forth in the "Conditions of Acknowledgment and Acceptance of your Purchase Order," under which the bearings were originally sold by the Company to the Customer.

7. Except as provided in paragraph 1d above, this Parts Replacement Agreement will apply where the condition of parts requiring replacement or repair has been found upon inspection either by the Company, or by the Customer or any other person for the Customer prior to the forwarding of the complete bearing assembly to the Company in accordance with paragraph 3b above.

8. In the event of any dispute concerning the qualification of a bearing for replacement of parts under this Agreement, the necessity for replacement or repair of particular parts, or any other question concerning the application of this Agreement, the decision of the Company will be final.

9. This Agreement is for a term of _____ months from and after the effective date, and may be extended for successive periods of twelve (12) months by notice in writing from the Company to the Customer. Following the termination of this Agreement, any bearing assembly to which this Agreement became applicable during its initial term or any extension will continue to be eligible for replacement of parts in accordance with the provisions hereof.

IN WITNESS WHEREOF, the Company has executed and delivered this Agreement to the Customer as of the effective date specified above.

APPROVED:

_____
General Manager - Sales or Assistant General Manager - Sales
Railroad Division
The Timken Roller Bearing Company

THE TIMKEN ROLLER BEARING COMPANY

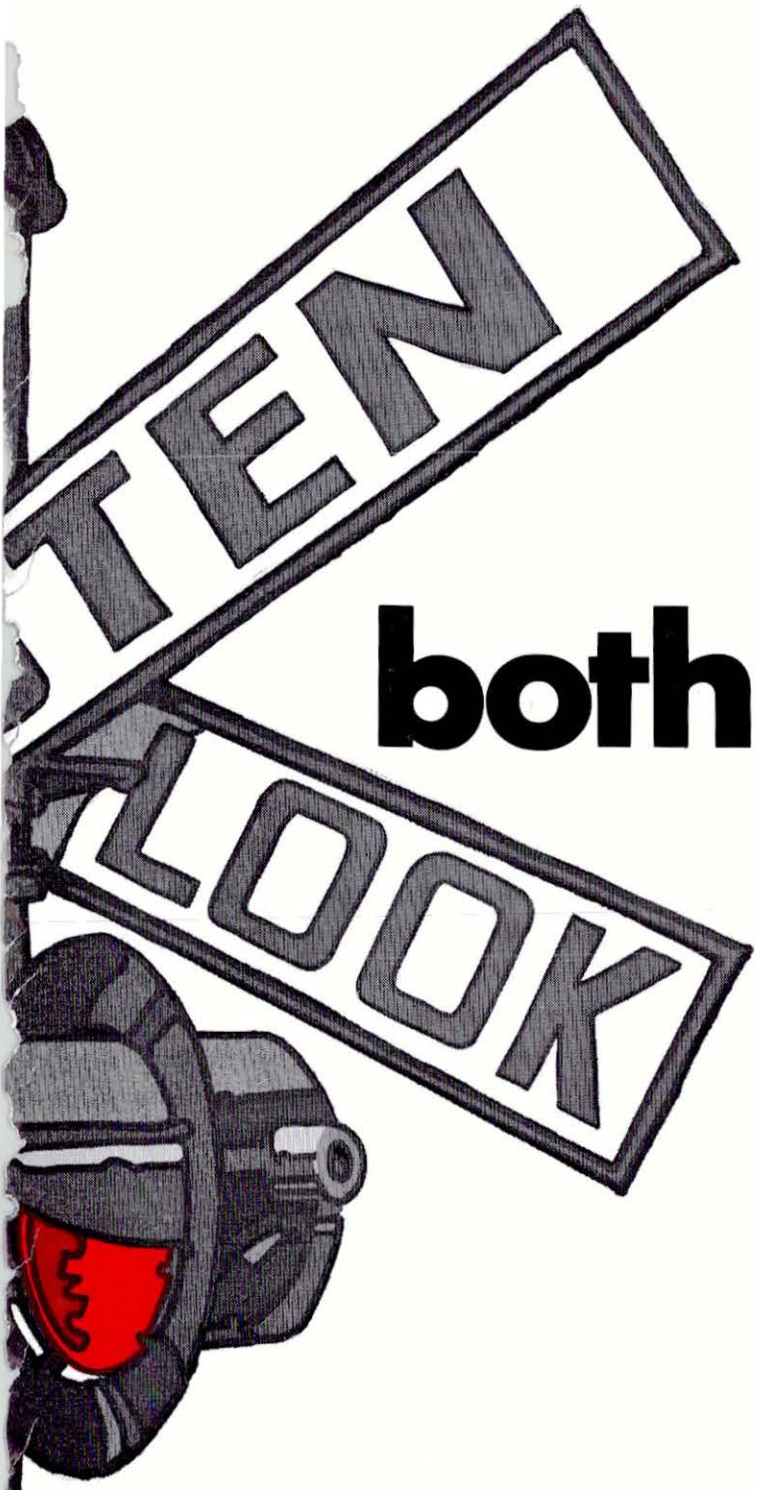
By _____
District Manager, Railroad Division

Our parts Replacement Agreement keeps a watchful eye on the past, as well as on the future.

It protects Timken® "AP" bearings that are made today until 7 years from today. Like any good warranty should.

But it also covers every "AP" bearing made up to 7 years ago. Like no other warranty.

How can it? Because the "AP" bearings we made back then are as dependable as those we make now. Design, manufacture and quality control have



both ways?

always met the same high standards. Ever since we began manufacturing "AP" railroad bearings back in '54.

The Timken "AP" bearing Parts Replacement Agreement can promise you better bearing protection because it protects a better bearing.

The Timken Roller Bearing Company, Canton, Ohio 44706. Timken bearings sold in 133 countries. Manufacturing in Australia, Brazil, Canada, England, France, South Africa and the United States.

TIMKEN®
REGISTERED TRADEMARK
TAPERED ROLLER BEARINGS

Circle 9 on coupon page 30

Third Quarter and Nine Months' Figures of Calendar Year 1969

(Dollar figures are stated in thousands: i.e., with last three digits omitted)

REVENUES AND EXPENSES OF RAILWAYS

Name of Road		Average mileage operated during period	Operating Revenues: Freight	Pass.	Total (inc. misc.) 1969	1968	Operating Expenses: Maint. Way and Structures: Total 1969	Total 1968	Deprec. and Retirements	Maint. Equipment: Total 1969	Total 1968	Deprec. and Retirements	Traffic	Transportation	Total 1969	Total 1968	Operating ratio 1969	1968	Net from railway operation	Railways tax accruals	Net Railway operating income 1969	1968
Northern Pacific	3 mos.	6,771	51,967	1,642	55,897	54,994	8,886	8,950	1,001	9,712	10,201	3,276	1,452	23,112	47,318	46,357	84.7	84.3	8,580	5,132	4,126	3,628
	9 mos.	6,772	148,883	3,870	159,270	153,241	24,780	23,702	3,157	31,329	29,198	9,848	4,917	68,324	141,987	132,554	89.1	86.5	17,283	15,866	5,000	7,145
Northwestern Pacific	3 mos.	324	2,443	7	2,459	2,750	628	693	56	136	151	3	21	929	1,896	1,817	77.1	66.0	562	268	—152	360
	9 mos.	324	7,985	14	8,034	8,056	2,134	1,806	213	398	366	10	68	2,694	5,665	5,097	70.5	63.3	2,369	739	44	863
Penn Central	3 mos.	20,530	317,884	37,522	398,440	372,115	45,705	44,981	7,210	66,039	63,739	16,013	5,940	195,807	343,454	315,851	86.2	84.9	54,987	26,548	—14,782	—9,173
	9 mos.	20,530	989,486	109,938	1,222,343	1,146,378	137,085	127,754	21,895	203,855	191,286	48,061	17,981	588,808	1,031,549	945,921	84.4	82.5	190,794	84,103	—32,367	—5,045
Penn-Reading Seashore Lines	3 mos.	322	1,826	73	2,045	1,983	451	366	74	388	372	60	11	1,462	2,427	2,221	118.7	112.0	—382	169	—1,172	—937
	9 mos.	322	5,673	119	6,304	5,903	1,306	1,235	168	1,097	1,126	183	41	4,205	6,989	6,802	110.9	115.2	—686	502	—2,853	—2,888
Piedmont & Northern	3 mos.	Merged into Seaboard Coast Line July 1, 1969																					
	9 mos.	Merged into Seaboard Coast Line July 1, 1969																					
Pittsburgh & Lake Erie	3 mos.	209	9,537	15	9,999	8,895	1,163	1,053	182	1,313	2,717	1,460	216	3,597	8,902	7,837	89.0	88.1	1,097	2,597	2,743	3,825
	9 mos.	209	27,008	45	28,728	26,864	3,140	2,918	467	9,461	8,570	4,320	610	10,515	25,637	24,141	89.2	89.9	3,091	8,042	8,389	9,959
Reading	3 mos.	1,228	22,365	1,841	27,124	25,996	4,162	4,138	611	4,717	4,797	1,484	695	11,756	23,056	22,883	85.0	88.0	4,067	2,236	143	—1,159
	9 mos.	1,228	67,147	5,670	81,178	79,676	12,046	12,074	1,793	14,462	14,914	4,489	2,159	35,156	69,222	68,665	85.3	86.2	11,955	6,533	—102	—338
Richmond, Fredericksburg&Potomac	3 mos.	118	4,692	1,127	6,648	6,574	583	514	103	830	751	245	95	2,094	4,181	3,992	62.9	60.7	2,467	1,540	738	973
	9 mos.	118	15,760	3,117	21,521	19,446	1,815	1,617	314	2,579	2,577	736	291	6,662	13,144	12,377	61.1	63.6	8,377	4,927	2,907	2,451
St. Louis-San Francisco	3 mos.	4,547	40,494	—	42,523	39,489	5,495	5,353	728	5,844	5,492	2,216	1,496	16,661	31,909	30,010	75.0	76.0	10,614	4,461	4,312	3,505
	9 mos.	4,562	123,437	—	129,480	118,725	16,552	16,266	2,157	17,583	16,747	6,602	4,520	49,657	95,627	87,890	73.9	74.0	33,853	13,580	14,361	12,948
St. Louis Southwestern	3 mos.	1,520	27,125	—	27,514	26,414	2,733	2,452	226	4,818	4,582	2,493	728	9,508	18,621	17,783	67.7	67.3	8,893	3,269	6,474	5,260
	9 mos	1,520	85,689	—	86,914	79,786	7,519	6,707	679	14,139	12,950	7,280	2,213	27,905	54,151	50,353	62.3	63.1	32,763	12,560	21,330	19,829
Savannah & Atlanta	3 mos.	167	976	—	1,014	1,019	63	204	11	212	196	87	26	330	758	805	74.8	79.0	256	242	116	124
	9 mos.	167	3,339	—	3,440	3,360	358	612	173	642	532	260	80	999	2,355	2,451	68.5	72.9	1,085	803	454	481
Seaboard Coast Line	3 mos.	9,309	103,995	5,540	114,817	105,893	14,972	13,292	1,450	21,493	18,972	6,048	3,318	43,785	90,150	85,357	78.5	80.6	24,667	9,525	5,608	5,584
	9 mos.	9,290	328,939	16,887	363,102	326,459	44,614	41,909	4,733	61,994	58,826	18,434	10,482	137,332	273,723	258,391	75.4	79.1	89,379	32,841	27,766	19,401
Soo Line	3 mos.	4,696	26,094	—	26,744	22,504	4,768	4,292	326	3,319	3,197	911	797	10,609	20,662	18,516	77.3	32.3	6,082	2,371	1,743	956
	9 mos.	4,696	76,274	—	78,097	68,371	12,178	10,342	993	10,481	9,591	2,714	2,344	30,688	59,185	52,171	75.8	76.3	18,912	6,677	5,349	6,107
Southern Railway	3 mos.	6,075	86,660	1,401	92,110	83,412	14,273	10,840	1,753	16,719	15,836	5,633	2,075	30,031	67,848	60,601	73.7	72.7	24,262	9,496	12,579	10,031
	9 mos.	6,075	265,299	3,513	281,227	250,823	37,486	30,413	4,596	48,035	44,839	15,509	6,222	88,077	194,706	176,936	69.2	70.5	86,521	35,208	40,402	31,612
Alabama Great Southern	3 mos.	530	8,776	141	9,537	9,104	1,417	1,245	257	1,849	1,856	600	219	3,529	7,540	6,789	79.1	74.6	1,997	632	433	1,173
	9 mos.	530	27,748	340	29,662	27,425	5,566	3,534	648	5,569	5,254	1,806	654	10,890	24,409	20,007	82.4	73.0	5,214	1,406	1,195	3,640
Cinn., New Orleans & Tex. Pac.	3 mos.	337	12,677	35	13,228	12,365	1,834	1,797	225	2,835	2,829	1,240	294	3,764	9,285	8,918	70.2	72.1	3,943	1,857	2,270	2,418
	9 mos.	337	38,021	93	39,852	36,862	4,400	4,326	765	8,350	7,982	3,456	869	11,051	26,359	25,342	66.1	68.7	13,493	5,856	8,003	8,139
Georgia Southern & Florida	3 mos.	395	3,464	—	3,603	3,454	734	486	53	237	185	26	89	1,160	2,350	1,812	65.2	52.5	1,253	124	97	254
	9 mos.	395	11,365	6	11,915	10,957	1,762	1,550	144	684	581	78	255	3,321	6,472	5,561	54.3	50.8	5,443	1,215	1,148	1,048
New Orleans & Northeastern	3 mos.	Merged into Alabama Great Southern January 31, 1969																					
	9 mos.	Merged into Alabama Great Southern January 31, 1969																					
Southern Pacific	3 mos.	11,752	222,463	3,662	233,726	223,511	28,065	24,715	2,793	41,310	41,701	14,766	3,742	95,669	182,804	172,645	78.2	77.2	50,922	21,251	15,149	18,552
	9 mos.	11,754	658,853	9,041	690,198	643,898	82,895	75,192	8,426	126,506	122,152	43,166	112,59	274,659	536,706	497,963	77.8	77.3	153,491	64,412	50,879	52,811
Spokane, Portland & Seattle	3 mos.	922	9,369	220	10,277	9,409	1,625	1,486	180	1,502	1,595	400	132	4,370	8,150	7,645	79.3	81.3	2,126	1,052	231	207
	9 mos.	922	28,882	500	31,380	29,423	4,430	4,393	528	4,946	4,683	1,198	406	13,185	24,470	22,682	78.0	77.1	6,911	3,340	1,256	1,726
Texas & Pacific	3 mos.	1,936	19,037	54	20,575	19,125	2,527	2,800	262	3,834	3,608	1,247	705	8,123	16,136	15,937	78.4	83.3	4,439	1,301	1,652	1,067
	9 mos.	1,946	59,369	192	63,731	58,290	8,805	8,393	986	11,607	10,605	3,773	2,155	23,759	49,061	46,802	76.9	80.3	14,670	4,182	5,829	4,455
Toledo, Peoria & Western	3 mos.	239	2,080	—	2,185	2,322	387	356	18	237	210	56	183	826	1,813	1,694	83.0	73.0	372	157	15	179
	9 mos.	239	6,739	—	7,117	6,685	1,029	823	56	703	658	169	546	2,509	5,341	4,818	75.0	72.1	1,776	665	419	537
Union Pacific	3 mos.	9,482	151,281	3,915	162,657	152,784	18,727	18,199	1,895	28,535	27,061	12,264	4,107	59,153	121,202	115,280	74.5	75.5	41,455	17,828	20,745	20,631
	9 mos.	9,483	435,494	9,729	467,509	436,284	53,501	52,461	5,661	83,261	81,212	36,313	12,448	169,924	350,373	333,193	74.9	76.4	117,136	57,545	57,071	52,608
Western Maryland	3 mos.	866	11,091	—	11,662	11,587	1,830	1,804	198	2,855	2,721	909	464	4,452	10,360	9,931	88.8	85.7	1,302	770	1,374	1,599
	9 mos.	866	35,441	—	37,536	36,260	5,558	5,541	662	8,632	8,937	2,806	1,411	13,551	31,352	31,068	83.5	85.7	6,184	3,414	5,110	5,268
Western Pacific	3 mos.	1,176	15,955	633	17,066	17,659	2,689	2,440	276	3,179	3,055	992	898	7,109	15,424	14,384	90.4	81.5	1,642	890	278	1,587
	9 mos.	1,176	47,638	1,364	50,530	49,362	7,090	6,460	850	10,262	8,698	2,960	2,773	20,494	45,162	39,868	89.4	80.8	5,367	2,775	1,187	4,549

PC chief sees a silver lining

Penn Central has announced that it will not pay a fourth-quarter dividend. Chairman Stuart T. Saunders said current business conditions and the need to conserve cash dictated the decision to limit 1969 dividends to the $1.80 a share paid during the first three quarters.

The PC board, Saunders added, will give consideration during 1970 to resuming dividend payments, either in cash or in stock, or both.

● **Good signs, though.** Saunders pointed toward some encouraging developments for Penn Central railroad operations. One, he said, is the turndown in per diem expenses which began in June. That trend is expected to increase substantially in 1970. PC expects to cut per diem expenses by more than $6.5 million in the current quarter, and by over $9 million for the full second half.

PC will gain about $7.5 million during the fourth 1969 quarter from the 6% freight rate increase which became effective Nov. 18, and about $80 million on an annual basis.

Saunders cited the PC's passenger deficit as a major cause of railroad operating losses. But, he said, the railroad expects to end the year with less passenger losses than the 1968 deficit of nearly $115 million. He added that the railroad industry and railroad labor are vigorously seeking to obtain Federal assistance on the passenger service problem. Prospects for enactment of such legislation by the 91st Congress, he said, are "better than they have ever been."

● **Metroliner gains.** Penn Central's new Metroliner trains are producing a 14% increase in passenger traffic between New York and Washington, the PC officer said. Metroliner service will be stepped up to 18 trains a day on Dec. 14 (RA, Dec. 1, p. 7). The railroad expects to receive during 1970 much of the $11.5 million allocated by the Federal government for the project.

Penn Central has spent nearly $600 million for a series of merger-connected capital projects.

● **Even better next year.** "The progress that we are now making in getting the results we envisioned from our merger should grow and accelerate during 1970," the PC chairman said. ■

FRANK MALONE

WATCHING WASHINGTON

IN JUST THREE MONTHS, a national tax-fed fund can provide more dollars for building highways than the nation's railroads can put into capital improvements in *12* months. And, tax dollars already have paid for more highway miles than the total number of line miles now operated by the entire rail industry. You learn these two interesting things from Federal Highway Administration quarterly reports.

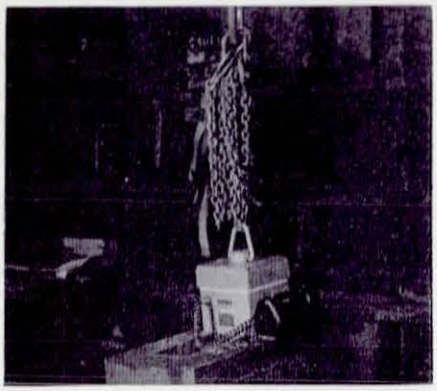
THE ROAD FUND TOOK IN $1.388 BILLION in third-quarter 1969, the most recent FHWA report says. Railroads, according to the AAR fact book, were able to put out $1.1 billion in capital expenditures for all four quarters of 1968. The highway trust fund pays (1) nine-tenths of the costs of the Interstate Highway Systems, and (2) five-tenths of the costs of primary-secondary-urban road projects within states. Since Congress created the fund in 1956, 28,750 Interstate and 233,855 miles of other roads have been financed.

THE INTERSTATE IS NOW 68% COMPLETE, the FHWA report says. Designed as the nation's key highway network, the System will cover 42,500 miles. Pieces of the network are planned to accommodate the traffic level of 20 years from the time they're mapped. Actually, 96% of the System now is in some form of advancement—completion, construction, engineering or right-of-way acquisition. For fiscal 1970, $4 billion is marked Interstate. Rail outlays for that period are not likely to come anywhere near $4 billion.

FEDERAL ROAD-SPENDING HAS BEEN STAGGERING. Since 1956, FHWA, says, the Interstate has swallowed $38.2 billion, and the primary-secondary-urban system, $26.9 billion. Rail capital investment in those 13 years? About $20 billion.

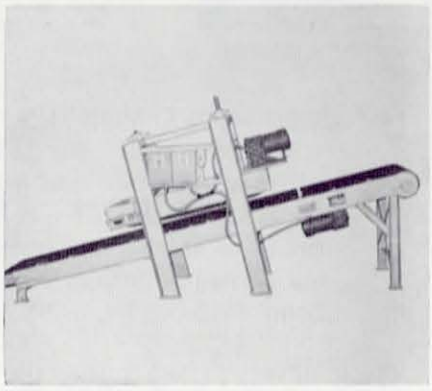
WHERE DOES ALL THAT MONEY COME FROM? Mainly from your gas money. The major source of the trust fund is a 4% tax on motor fuel for vehicles of all kinds. Of that three-months' $1.4 billion, for example, $977 million (69%) came from motor-fuel taxes, FHWA says. Also prescribed by the 1956 Highway Revenue Act are these other taxes: 10% of the wholesale price of new trucks, buses and trailers; 10 cents per pound for tires and tubes; 8% of the wholesale price of parts and accessories for trucks and buses; 6% on lubricating oil; an annual $3 on each 1,000 pounds for vehicles weighing more than 13 tons; and 5 cents per pound for "other" tires and tread rubber. The taxes are set to run until Oct. 1, 1972.

NEW PRODUCTS REPORT



Lifting magnet (RA-1)

The first permanent lifting magnet to use the flux transfer principle in combination with a rechargeable control coil battery needs no maintenance, other than plugging in for overnight recharge. Rated conservatively at 2,000 lb, the Type FTL permanent lifting magnet is made of powerful ceramic magnetic material. Its control coil is powered by a rechargeable nickel-cadmium battery. It is easily attached to any crane hook. *Westinghouse Electric.*



Bag flattener (RA-2)

The appearance and handling of multi-wall bag packaging is greatly improved through use of a new bag flattener. The machine assures uniform shape and size of packaged bags, which gives more compact, safer bags for stacking on freight cars, trucks or pallets. Reduced storage space can add up to 30% when bags are properly flattened and excess air expelled. The easily installed machine is available in various lengths and widths. *Stewart-Glapat Corp.*

Water alarm (RA-3)

AquAlert, an automatic electronic warning device powered by a self-contained transistor battery, detects the presence of excessive water and other liquids and activates a high-pitched alarm tone. As a liquid-level instrument, it signals when fluid reaches a predetermined point. Water-detection device is a sensor placed at flooding level. A glowing light may be had instead of the sound alarm, or both audio and visual indicators. *Zeigler Electronics.*

NEW LITERATURE

BATTERIES. A series of new catalog sheets on the complete line of Ucar primary batteries and battery switching units has been issued by Union Carbide Corp's Carbon Products Division. (NL-1)

BRIDGE DESIGN. A new engineering bulletin by the Portland Cement Association presents a design procedure for continuous bridges with precast-prestressed concrete girders. (NL-2)

BULK MATERIALS MEASUREMENT. A new sonar-type instrument that measures the level of bulk materials and slurries is described in new literature from C. W. Stevens, Inc. (NL-3)

WIRE AND CABLE. General Cable Corp. has published a comprehensive guide outlining its broad range of wire, cable and support products for the railroad industry. (NL-4)

GLOVES. Edmont gloves job-fitted for the transportation industry are described and pictured in a new four-page color brochure. (NL-5)

RAILWAY AGE
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NAME ..... TITLE .....

COMPANY .....

ADDRESS .....

CITY ..... STATE ..... ZIP .....

• Inquiries can be processed only if title and company are shown. 12/8/69

Can the land-bridge be built?

When you come right down to it, what *are* the prospects for land-bridge? Do railroads really have a shot at a bright new market, with a full land-bridge service or with what's now being called minibridge?

Santa Fe's general manager-market research, John A. Grygiel, has been a persistent advocate of land-bridge planning. And by Grygiel's arithmetic, the potential traffic is worth going after.

Santa Fe has made a proposal for a full-fledged land-bridge unit-train operation; a number of roads have joined in offering rates covering single- and multiple-car movements. After it made its original proposal, Grygiel says, Santa Fe people discussed "with interested potential users a unit train between the U.S. West Coast through California ports and the U.S. East Coast through Atlantic ports for six cargo flows: Orient to Europe, Orient to U.S. East Coast, U.S. West Coast to Europe, Europe to Orient, Europe to U.S. West Coast and U.S. East Coast to Orient."

"We visualize," says Grygiel, "a containership sailing from Japan direct to a California port with a full complement of loaded containers. Some will contain normal trans-Pacific traffic, the rest will move across the continent by unit train to the East Coast. Some will be reloaded there onto a containership serving the North Atlantic-Europe trade, and the rest will terminate on the East Coast. In the opposite direction, these procedures will be reversed."

Santa Fe's current thought is that "containerized traffic moving between the Far East and Europe should logically flow through California and East Coast ports, using traffic originating or terminating in the U.S. at the base . . . Container systems will be most successful in the best revenue-producing trade routes. It is quite possible that containerships will not be necessary between the Far East and Europe." ■

WHAT IS THE POTENTIAL FOR LAND-BRIDGE/MINI-BRIDGE?

U.S. general cargo imports and exports, susceptible to containerization and moving via Panama Canal between U.S. ports and Europe/Orient

	Total tonnage (long tons)
U.S. Atlantic, Great Lakes and Gulf Coast ports to and from Orient	7,918,000
U.S. Pacific ports to and from Europe	1,181,000
Total	9,099,000

U.S. general cargo imports and exports susceptible to containerization and moving one-ocean between U.S. ports and Europe/Orient

	Total tonnage (long tons)
U.S. Atlantic, Great Lakes and Gulf Coast ports to and from Europe	12,256,000
U.S. Pacific ports to and from Orient	4,761,000
Total	17,017,000#

Between 40% and 50% for local distribution.

Study LOCOMOTIVE MECHANICAL EQUIPMENT MAINTENANCE in spare time at home

The man they respect in most shops is the one who's apt to know the answer when a problem arises. You know a man like that; wouldn't you get a lot of satisfaction and personal pride in being like him? Such knowledge sooner or later always adds to the pay check, and too, pays off in greater job satisfaction and personal pride. And who can put a dollar value on that?

You can be such a man by taking this two-year course for mechanical department employees who want to know more about locomotive mechanical equipment maintenance and repair. Two lessons a month, in simple, non-technical language, guide you swiftly to a better working knowledge of the subject. Your lessons are graded by instructors who give individual, personalized advice as needed. The cost is low and payable in monthly installments. For full information, return coupon.

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1809 Capitol Ave., Omaha, Neb. 68102
Send full information on locomotive mechanical equipment maintenance home study course.

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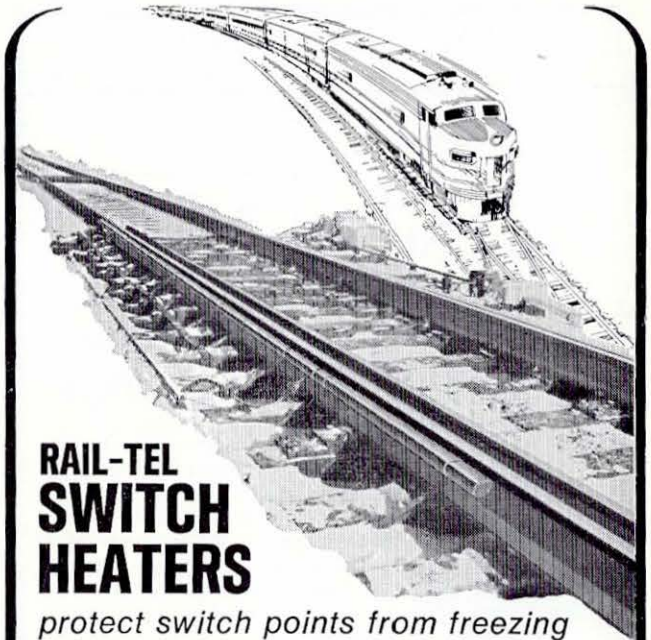

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Proven design assures correct combustion under all conditions. Improved unit burner increases efficiency — dispatcher controlled, or automatic operation with the Rails Company Snow Detector.

New! Type RTS — Advanced design — Space age materials — New burner construction — New inspirator design.

made to last ■ easy to install ■ requires minimum maintenance ■ proven in thousands of installations all over the country.

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N. H. Turbeville, Jr.
Brenco

James S. Richey
AMF Beaird

Cyrus F. Bullock
Transerv

SUPPLY TRADE

Jack W. Miller, Jr., general sales manager, **Brenco, Incorporated,** Petersburg, Va., has been elected vice president–sales. **Nathan H. Turbeville, Jr.,** manager, has been elected vice president, **Brenco Bearing Service, Inc.**

James S. Richey has been appointed manager–railroad products, **AMF Beaird, Inc.,** subsidiary of American Machine & Foundry Co., at Shreveport, La.

Frank C. Pulcrano has been appointed manager of manufacturing engineering, **American Car and Foundry division, ACF Industries,** St. Charles, Mo. He was formerly manager of design development for the division.

Cyrus F. Bullock, former vice president **Associated Transport Inc.,** New York, has been named executive vice president of **Transerv Systems, Inc.,** a rail tank car leasing organization.

Fred J. Fisher has been appointed vice president–Pacific, **Integrated Container Service, Inc.,** at San Francisco.

Robert B. Meihaus, former director of marketing, **Brinkley Co.,** has joined **Dorsey Trailers'** staff of executive account managers, with headquarters at St. Louis. He will service piggyback, fishyback and other major fleet operators.

Ralph M. Winkler has been named manager of industrial relations, Huntington W. Va., plant of **American Car & Foundry Division, ACF Industries.** Mr. Winkler was formerly manager of training and development, Carter Carburetor division, St. Louis.

Dr. R. Gordon Cook has been appointed market planner, **General Railway Signal Co.,** Rochester, N.Y. Dr. Cook, who joined GRS in 1967, will analyze customer needs as directional indices for the accelerated development of new, need-responsive GRS products.

P. G. Brewer, manager, Detroit Diesel sales, **General Motors of Canada Limited,** has been appointed manager, railway and power product sales. **Walter Bedford** succeeds Mr. Brewer.

Warren P. Lewis, sales representative, Chicago district, **CF&I Steel Corp.,** has been named assistant manager–rolled steel products sales, at Denver.

OBITUARY

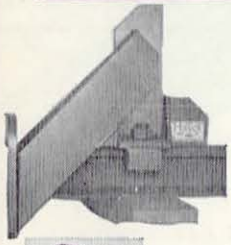
George F. McGowan, 59, a motive power engineer, sales engineer, and consultant, died Nov. 12 in Norfolk, Va. He had served with the American Locomotive Co., the Valve Pilot Corp., the Orinoco Mining Co. (during construction of its iron ore railroad in Venezuela), and Magor Car Corp. He authored the diesel-electric section of the 1950 Locomotive Cyclopedia, and a two-volume Diesel-Electric Handbook, both published by Simmons-Boardman Publishing Corp.

Are you stopping cars by "center-pin shear"?

• You are unless the Wheel Stops you use are

Wheels hitting a rigid Stop started this center-pin on its way to destruction

Hayes CUSHION® Wheel Stops



Type SF (two identical blocks like one at left) cushions the impact by controlled friction. At slow approach, wheels ease Stop blocks gently against tie in cushioning ballast. At higher speeds, wheels force blocks down on rail, adding friction braking to cushion.

All-steel construction—universal fit—no holes to drill—tighten four nuts for installation.

Free leatherette ring-binder catalog of world's most-specified derails, bumping posts and wheel stops (including periodic supplement sheets). Write on letterhead.

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Circle 11 on coupon page 30

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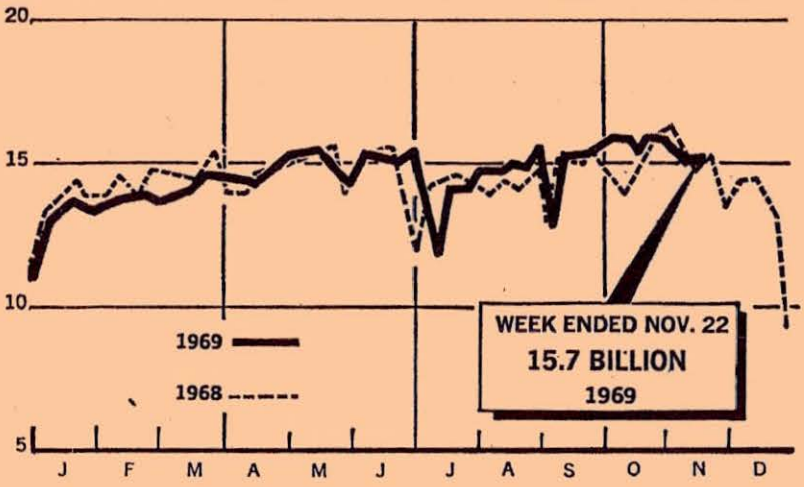
On the Ocean, Bal Harbour

MIAMI BEACH

RAIL FREIGHT TRAFFIC TRENDS

BILLION TON-MILES (Estimated)

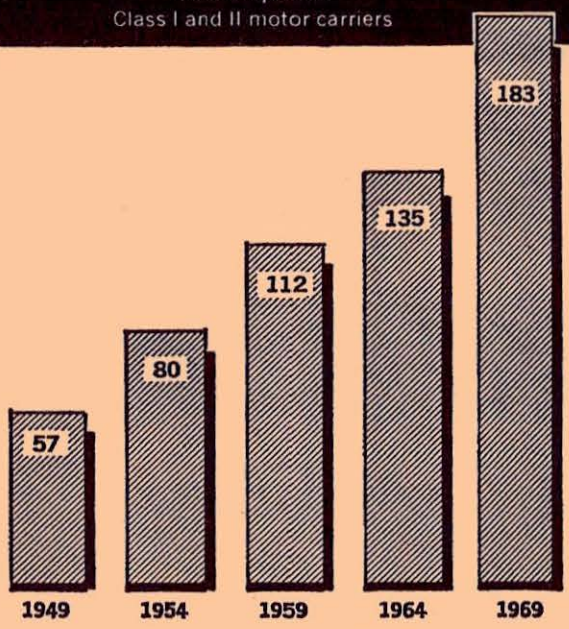


Source: Association of American Railroads

INTERCITY TRUCK TONNAGE INDEX*

Second quarter

Class I and II motor carriers



*Average second quarters 1957-59 equals 100.

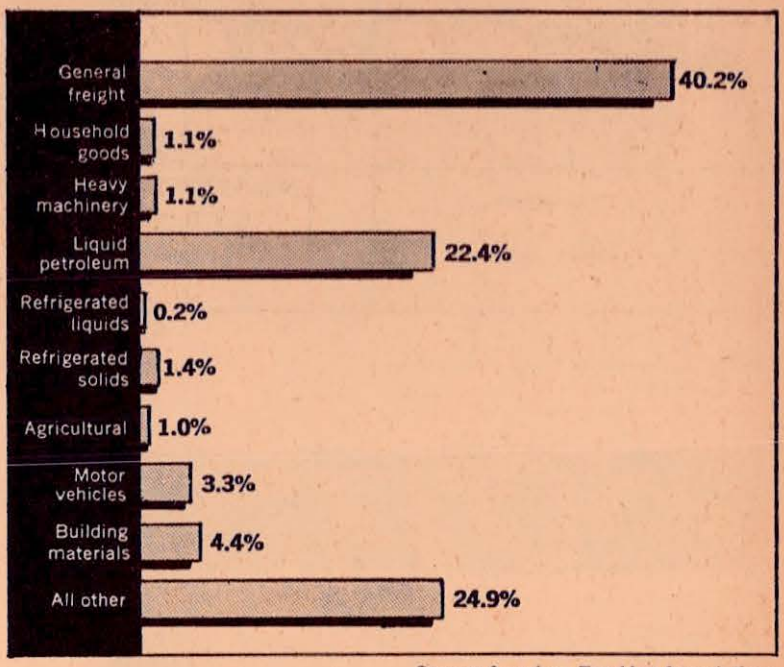
Source: American Trucking Associations

Current Statistics

Net income, Class I roads	
Nine months, 1969	$372,000,000
Nine months, 1968	388,000,000
New freight cars on order	
Nov. 1, 1969	42,043
Nov. 1, 1968	21,388
New freight cars delivered	
10 mos., 1969	57,032
10 mos., 1968	47,599
Serviceable cars	
Oct. 1, 1969	1,361,374
Oct. 1, 1968	1,386,742

INTERCITY TRUCK TONNAGE BY COMMODITIES

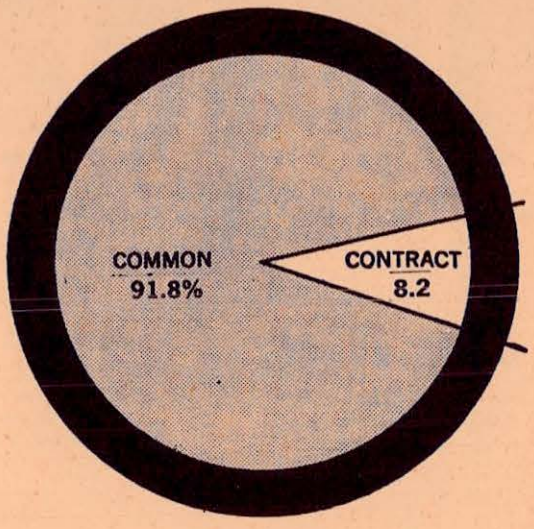
All carriers, Second quarter 1969. Total tons: 159,937,903



Source: American Trucking Associations

INTERCITY TRUCK TONNAGE BY TYPE OF CARRIAGE

All carriers, Second quarter 1969. Total tons: 159,937,903



Source: American Trucking Associations.

MARKET OUTLOOK

CARLOADINGS

Loading of revenue freight in the week ended Nov. 29 totaled 516,596 cars, the Association of American Railroads announced on Dec. 4. This was a decrease of 58,543 cars, or 10.2%, compared with the previous week; an increase of 2,822 cars, or 0.5%, compared with the corresponding week last year; and a decrease of 40,119 cars, or 7.2%, compared with the equivalent 1967 week. Ton-miles generated by carloadings in the week ended Nov. 29 are estimated at 14.1 billion, an increase of 4.7% above the corresponding week of 1968, and 1.0% below the 1967 week.

REVENUE FREIGHT CARLOADINGS

Commodity	Nov. 22 week	Preceding week	Per cent change
Grain	30,516	32,345	— 5.7
Other farm products	28,162	26,942	+ 4.5
Metallic ores	38,216	42,612	—10.3
Coal	106,941	96,379	+11.0
Crushed stone, gravel and sand	28,316	30,920	— 8.4
Nonmetallic minerals	9,783	10,189	— 4.0
Grain mill products	21,849	21,641	+ 1.0
Food and kindred products	26,293	26,162	+ 0.5
Primary forest products	24,409	24,718	— 1.3
Lumber and wood products except furniture	15,557	15,751	— 1.2
Pulp, paper and allied products	25,512	25,491	+ 0.1
Chemicals and allied products	29,074	28,332	+ 2.6
Petroleum products	11,809	11,252	+ 5.0
Stone, clay and glass products	20,231	21,260	— 4.8
Coke	9,573	9,612	— 0.4
Metals and products	28,078	27,822	+ 0.9
Motor vehicles and equipment	25,333	25,690	— 1.4
Waste and scrap materials	14,811	15,620	— 5.2
Forwarder and shipper association traffic	8,254	8,063	+ 2.4
All other carloads	70,667	70,566	+ 0.1
LCL traffic	1,755	1,734	+ 1.2
Total cars loaded	575,139	573,101	+ 0.4

CUMULATIVE TOTAL, 47 WEEKS	1969	1968	1967
	25,746,529	25,759,949	25,537,634

IN CANADA

Cumulative	Revenue Cars Loaded	Total cars Rec'd. from Connections
Nov. 7, 1969	3,095,880	1,042,553
Nov. 7, 1968	3,221,055	1,053,597

FREIGHT-TRAIN CARS

● *Canadian Pacific.*—Has placed an $8-million order with Marine Industries Ltd. of Quebec for 400 steel covered hopper cars of 100-ton and 4,500-cu.-ft. capacity. The cars are designed for general purpose loading of light bulk commodities that require weather protection. They have a higher cubic capacity than other covered hoppers in the CP fleet. CP Rail has also placed an order with National Steel Car Corp. Ltd. of Hamilton for 100 lightweight container flatcars. The order is valued at more than $2 million and is similar to other cars CP introduced earlier this year. Both orders are scheduled for delivery to start in January, 1970.

● *Trailer Train.*—Ordered 31 89-ft, 4-in. standard level cars from Bethlehem Steel. This brings TTX purchases of new cars since Jan. 1 to 5,402. On Nov. 20, TTX had 53,908 cars in service and on order.

NEW FACILITIES

● *Louisville & Nashville.*—Will consolidate yard offices at Loyall Yard, near Harlan, Ky., in a new metal office structure which will also house communications equipment and train-crew locker facilities.

MAINTENANCE EXPENDITURES

● *Third quarter of 1969 up 3.6% above third quarter of 1968.*—Expenditures by Class I roads for maintenance of equipment, way and structures in the third quarter of 1969 were up about $30.9 million, compared with the third quarter of 1968, according to report of AAR Economics & Finance Department, summarized below.

	Third Quarter 1969	1968	% Change
Maintenance of way and structures	$391,874,709	$370,062,552	+5.9
Maintenance of equipment	486,581,244	477,529,523	+1.9
Totals	878,455,953	847,592,075	+3.6

FOREIGN

● *Mexico.*—Has signed an agreement with the Export-Import Bank of the United States for $5,384,389 to help finance the purchase of U.S.-made locomotives, signaling and maintenance equipment for the National and Pacific railways. The new credit will include the purchase of four diesel electrics for each road. The money is to be repaid in 16 semiannual installments beginning in August, 1971 at 6% annual interest on outstanding balances. Eximbank has previously authorized 17 loans to the Mexican government totalling $278.5 million for the development and rehabilitation of its railroads.

YOU OUGHT TO KNOW

Santa Fe plans to reroute the "SF Chief"

Rail passenger service between Chicago and the West Coast may undergo a change in emphasis Jan. 5, with Santa Fe planning the change. Under the road's proposal, the "San Francisco Chief" would be rerouted at Barstow, Calif., to operate into Los Angeles rather than into San Francisco. Coach train Nos. 23 and 24 between Chicago and Los Angeles would be discontinued. Santa Fe says patronage is declining—and its annual loss on the two pairs of trains is now pegged at about $7 million. The proposed change, the road says, would involve savings of about $5 million and would make possible the "concentration of Santa Fe's premium service efforts on the southern California area." Santa Fe says arrival and departure times of the "Chief" trains will be scheduled to provide convenient connections at Los Angeles with Southern Pacific trains to and from northern California. "Super Chief" and "El Capitan" service between Chicago and Los Angeles would not be affected by the proposed move.

PC's N.M. Stone joins Seatrain as p.r. chief

Norman M. Stone, a well-known figure in railroad public relations and advertising circles for more than two decades, resigned his position with Penn Central last week to become director of public relations and advertising for Seatrain Lines, Inc., at Edgewater, N.J. Stone joined the New York Central more than 27 years ago, and rose to the position of manager of public relations and advertising prior to Central's merger with the Pennsylvania in 1968. As director of visual and special projects for the merged company, he helped to establish the new corporate identity. Since March of this year he has been manager of public relations for Penn Central at New York.

Container pioneer wins Seley Awards

The Seley Transportation Awards for 1969 will go to Malcolm P. McLean, president of McLean Industries and chairman of Sea-Land Services, Inc., for his pioneering work in containerization. The presentation will be made by the Transportation Association of America during TAA's National Transportation Institute to be held in New York Jan. 28, 1970. The chairman of the Seley Awards committee, Donald G. Ward, general manager—container operations of the General American Transportation Corp., says McLean "is generally considered to be the originator of the containership as a prime mover of ocean cargo."

Will lessors design their own equipment?

Lessors of the future will be designing the equipment they lease, suggests Palmer Bayer, president of Intermodal Transportation Systems, Inc. Speaking at the annual conference of the Association of Equipment Lessors, Bayer pointed to the importance for lessors of becoming more than "money brokers." He urged the application of imagination and innovation in the developing and design of the equipment being leased as well as in the pricing of services. Intermodal's own specially designed "Intermodal Unit," which can be used as a piggyback trailer with wheels or a maritime container without wheels, was noted as one example. The company's first nine months of operation show rail lease commitments for some $18 million of piggyback trailers, representing a fleet of over 3,100 units.

Fruehauf reports third quarter earnings up 70%

Third quarter net earnings for Fruehauf Corp. showed a record 70% increase (to $6.3 million) over the same quarter in 1968 ($3.7 million). Net sales showed a 45% increase, from $100 million for the third quarter of last year to $145 million for the third quarter this year. Net earnings for the first nine months were $19.2 million, an increase of 51% over the $12.75 million last year, with net sales rising 33%. William E. Grace, president and chief executive officer, attributes the increases to the "expansion of the market for retailers and containers."

Newell C. Brown
IC

D. G. Bainbridge
L&HR

J. R. Jones
Santa Fe

W. John Swartz
Santa Fe

Milton A. McIntyre
SP

Carl A. Ball
SP

Samuel B. Burton
SP

L. W. Sloan
SP

C. M. Roddewig
WRA

J. M. Souby, Jr.
WRA

PEOPLE

CANADIAN PACIFIC—A. J. Jamieson assistant manager freight rates, Montreal, appointed assistant to general manager–pricing, succeeding **J. L. Di Fruscia** (RA, Nov. 24, p. 52) **G. T. Brown,** rate research officer, Montreal, appointed assistant manager, freight rates–system, and has been succeeded by **J. D. McCulloch. D. E. Donnelly,** assistant manager freight rates, promoted to manager–Canadian freight rates, Montreal.

GRAND TRUNK WESTERN—Has separated its real estate and industrial development functions. **William P. Collins** named manager, real estate and tax, succeeding **Robert P. Cornwell,** previous manager of both functions, who has been appointed to the newly created position of project director. Mr. Collins, formerly manager of real estate and tax, **Detroit Terminal,** will have headquarters in Detroit.

GREAT NORTHERN.—Edmund J. Faust, supervisor freight equipment, St. Paul, promoted to assistant general superintendent transportation, Seattle, to succeed **E. E. Brink,** who retired Nov. 30. **L. V. Thoennes** succeeds Mr. Faust. **A. E. Hasson** appointed trainmaster, Montana division, Whitefish, Mont., succeeding **A. R. McKeen,** on leave of absence due to illness.

ILLINOIS CENTRAL.—Newell C. Brown appointed executive assistant to the president. He was formerly assistant director, **Office of Development Services,** Chicago.

LEHIGH & HUDSON RIVER.—Robert C. Winchester, vice president–traffic, Warwick, N.Y., retired Dec. 1, after 42 years of railroad service, 26 years of which were with the L&HR. **Donald G. Bainbridge,** eastern traffic manager, has assumed responsibility for the traffic department, with the title of general freight traffic manager, Warwick, **W. A. Mackintosh** named regional sales manager, New York area.

LOUISVILLE & NASHVILLE.—Robert M. Hendley appointed district sales manager, Savannah, Ga., to succeed **M. E. Sillin,** general agent, who retired Nov. 30 after more than 35 years' service. **L. M. Dunford,** division freight agent, Montgomery, Ala., named division freight agent-car utilization, Mobile. **Howard Holt** named division sales manager, to succeed Mr. Dunford.

MISSOURI PACIFIC-TEXAS & PACIFIC.—Steve P. Lawrence appointed assistant vice president-rates and divisions. Mr. Lawrence's successor as general manager-pricing and divisions, **MP,** is **Victor E. Kieffer,** freight traffic manager-rates and divisions.

P. L. Broussard, T. G. Duvall, H. E. McMillan, and **P. L. Tucker** named district coordinators management information division-installations, with headuarters at Houston, Tex., Dolton, Ill., North Little Rock Ark., and Fort Worth, Tex., respectively.

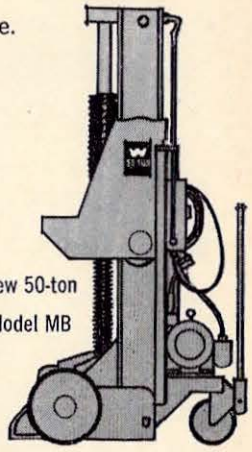
(Continued)

Dropping a locomotive could spoil your whole day

Since you don't need a fumble like that — you ought to be using Whiting portable jacks. They lift electro-mechanically. If the lights go out, mechanically set brakes, together with self-locking gears, hold the load in place.

We've added a new 50-ton model to our popular 25- and 35-ton unit line. You can operate any of them in unison or in groups of two or four via interlocking controls. All models and performance features are described and illustrated in our latest bulletin.

Write for one.
Or ask for
a conference.



New 50-ton
Model MB

WHITING CORPORATION
HARVEY, ILLINOIS 60426 U.S.A.
Circle 12 on coupon page 30

BURRO POWERS THE WAY to Extra Earnings

Model 40 BURRO, equipped with automatic folding leads, shown driving piles with a diesel pile hammer.

RUGGED! VERSATILE!

Burro Cranes and equipment get the job done fast and efficiently, on the line, in the yards or Stores Department. Pile driving, ditching, laying welded rail, or lifting track panels are but a few of the many jobs handled quickly and economically by the BURRO.

BURRO Rail Threader handling continuous welded rail.

Model 40 BURRO Ditcher supplies its own locomotive travel and work power. Loads dump cars, furnishes necessary air for dumping.

Write for complete information and BURRO Crane Bulletin No. 51

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Circle 13 on coupon page 30

NORFOLK & WESTERN.—**Gerald D. Dolin,** area supervisor management input, Columbus, Ohio, appointed manager-management information input, Roanoke, Va., succeeding **Harold R. Nelson,** retired after 47 years of railroad service.

PENN CENTRAL.—**Dennis C. Molen,** supervisor of freight train operation, New Haven Region, appointed superintendent of freight transportation of that region, succeeding **John L. Stanek,** named division superintendent, Toledo (RA, Nov. 10, p. 36).

Frank C. Matey, assistant director of international container sales, New York, appointed director—TrailVan sales (container and piggyback operation), succeeding **Don L. Werby,** resigned.

PENN CENTRAL TRANSPORTATION CO.—**J. M. Finch** appointed regional industrial engineer, New Haven, Conn. **E. G. Barske** named senior industrial engineer. **H. L. Miller** and **D. J. McMahon** appointed industrial engineers. **M. W. O'Connell** named methods analyst.

ROCK ISLAND.—**William F. Hartigan** named district manager-freight sales, Des Moines, Iowa, to succeed **W. T. Okerlund,** retired.

SANTA FE.—**J. R. Jones,** assistant to vice president, and **W. John Swartz,** manager of personnel development, named assistant vice presidents-personnel, Chicago.

SOUTHERN PACIFIC.—**Milton A. McIntyre,** general manager, San Francisco, promoted to assistant vice president-personnel. **Carl A. Ball,** manager of personnel, advanced to assistant vice president of labor relations. Mr. Ball's successor is **Samuel B. Burton,** assistant general manager. **L. W. Sloan,** first assistant manager of personnel, named manager labor relations.

Harold S. Orner, general mail, baggage and express traffic manager, San Francisco, retired recently after 34 years of service.

J. T. Nash, district freight agent, Alexandria, La., transferred to Corpus Christi, Tex. **H. H. Meiske** named district freight agent, Austin, Tex. Mr. Nash succeeds **B. L. Hicks,** and Mr. Meiske succeeds **R. A. Hodges,** both district freight and passenger agents, retired (RA Nov. 17, p. 56). Mr. Nash's successor is **W. J. Manix,** traveling freight agent, Harlingen, Tex.

WESTERN RAILROAD ASSN.—Will be formed, effective Jan. 1, 1970, through the consolidation of the **Association of Western Railways,** the **Executive Committee-Western Railroad Traffic Association,** the **Western Weighing and Inspection Bureau,** and a number of freight bureaus and committees (RA, Nov. 24, p. 9). **Clair M. Roddewig,** president, **AWR,** will serve as chairman. **James M. Souby. Jr.,** chairman and counsel, **Executive Committee-Western Railroad Traffic Assn.,** will also serve as president and chief executive officer of the new organization.

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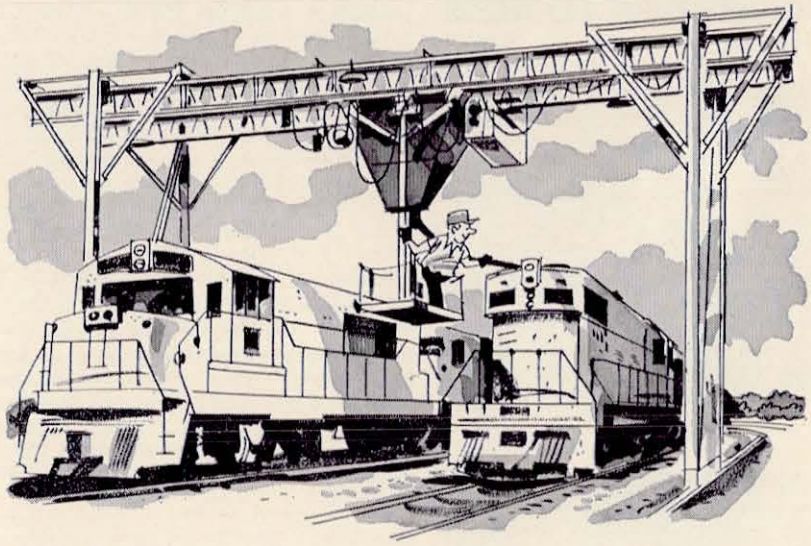

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VIEWPOINT

Efficiency is not always sufficient

The motor-carrier industry is committed to a campaign for bigger trucks—double- and triple-bottom rigs, moving on bigger and better highways.

The air carriers have gone from the jet to the stretch-jet and now they're moving into the era of the jumbo jet.

Waterways operators like the looks of bigger tows and the bigger locks needed to accommodate them.

Railroads go for size in power units, in freight-carrying vehicles, in train lengths.

Everywhere, the search is on for the "Big E." In the Navy, that was the Enterprise. In transportation, the "Big E" is Efficiency. And, perhaps, thereby hangs a tale—a tale of an industry that can sacrifice too much enterprise for a smattering of efficiency.

The president of one major railroad makes the point that railroad men "retreated into a concern for efficiency when competition tore away great chunks of their traffic from them. Yet it's obvious that an obsessive concern with efficiency almost guarantees concentration upon existing technology and technique. A total concern with efficiency, in short, leads managers into doing the same old thing in a slightly less costly fashion."

Is there a glaring exception to this rule-by-efficiency? This railroad president sees at least one: Piggyback.

Piggyback, he says, "is just about the most inefficient service being offered by the railroads. It is, for example, a very labor-intensive activity. But it is also very successful." And that combination, inefficiency and success, "may furnish us a clue as to where our future is."

The railroad president who offers these against-the-grain thoughts is Illinois Central's Alan S. Boyd. And, of course, he's not promoting inefficiency for inefficiency's sake. He's promoting railroads' total involvement with the total process of physical distribution—and piggyback, inefficient as it may be, is a shining example of total involvement.

WHAT MADE PIGGYBACK GROW?

The key to piggyback's growth, Boyd contends, "was not only in selling what customers wanted to buy but also in providing whatever degree of service—and really, labor content—customers had to have and were willing to pay for. It is obvious to most of the industry that customers will pay for service they feel they must have. Piggyback is a successful new service. It is also a pattern, showing how we can drastically alter the options that now exist in the triangular territory between the railroads, the shippers and the modal competition."

Not everybody will agree with Boyd's philosophy. Some would argue that service-experimenters are becoming fascinated with gimmicks, at the expense of basics. And certainly, some experiments will work less well than others. But is the industry doing so well that it doesn't need to explore every possible change in its methods?

That one phrase, "alter the options," has a ring to it—and the ring sounds awfully like that of a cash register.

May Christmas last forever!

MEMBER RPI Kerite

Humble announces the Antacid Railroad Oil.

New DIOL® RDS-81 tripled oil life in a severe-service railroad test with high-sulfur fuel. Projected savings from 8-month test: $1500 per locomotive per year. The reason: superior base number retention.

It's easy to control acid build-up, temporarily, by loading an oil with alkaline additives. But Humble has done something more permanent. We made new DIOL RDS-81 inhibit acid formation by inhibiting oxidation.

So it retains its alkalinity and gives anti-wear protection in severe service long after other oils fail.

In a test on a western railroad, DIOL RDS-81 actually started out less alkaline than the high-quality oil that the railroad had been using.

But their oil dropped to their condemning pH limit of 4.5 within 2 months in each of the 3 comparison locomotives. 12 oil changes in 8 months.

4 oil changes vs. 12

New DIOL RDS-81 running in the same high-output type locomotives, with the same high-sulfur fuel in the same expedited heavy-duty freight service required a total of only 4 changes. 4 vs. 12: three times longer life.

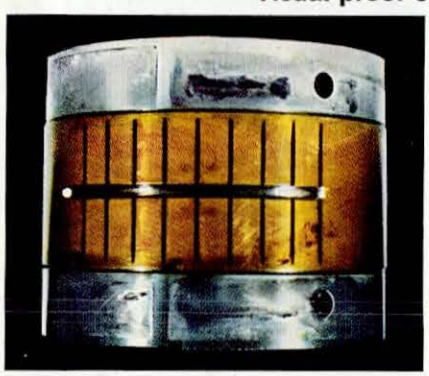
Projecting the oil, filter and labor savings of DIOL RDS-81 in this test indicates annual savings of $1,000 per locomotive.

30% less top ring side wear

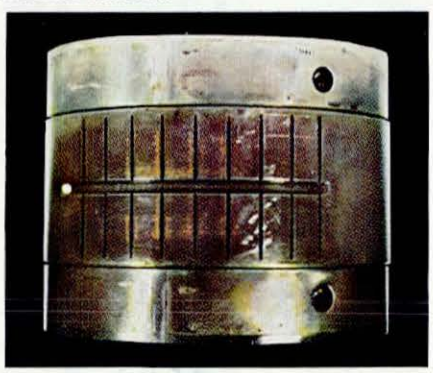
An additional $500 per year in maintenance savings is projected from the 8-month reduction in wear. For example, critical top ring side wear, which determines the overhaul period of these engines, was 30% less with our new oil.

Want to know more about this astonishingly long-lived oil? Clip the coupon and let a Humble railroad man give you the money-saving details.

Visual proof of antacid action.



LEAD FLASHING on this upper connecting rod bearing is completely gone after 97,000 miles on an Eastern railroad using high-quality oil.



LEAD FLASHING is still intact after 97,000 miles on new DIOL RDS-81, same road, same service. Striking evidence of the anti-corrosive action of the antacid oil.

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Yes, I want to know how much extra oil life we can expect with new DIOL RDS-81, the antacid oil. Send details of tests and let's discuss.

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